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A BIOGRAPHICAL SKETCH OF JOHN ARCHER, M. B.*

By One of his Descendants.

John Archer, M. B., was a son of Thomas Archer, a descendant of an English family that had settled in the north of Ireland; whence he emigrated to America with several brothers before the middle of the last century; and after a brief sojourn in Cecil county, Maryland, removed to what is now Harford (then part of Baltimore) county, where his son John was born near the present village of Churchville, on the 5th of May, 1741. Besides farming, Thomas Archer was agent for several extensive iron works in the vicinity. He also drew up indentures for his neighbors, auctioned off goods, etc., and thus acquired a considerable estate. Among his other enterprises, he set up, on his own premises, a skilled blacksmith, which, no doubt, gave rise to the false assertion that he himself worked at the trade. His wife, Elizabeth (Stevenson) Archer was also of an English family that had settled in the north of Ireland. Of their five children, four were swept off in their infancy by a malignant epidemic, the subject of this sketch barely escaping death from the same disease; and from him all of the name in Maryland who are in any degree whatever related to the family, are descended.

John Archer was educated in part at West Nottingham Academy, in Cecil county, a school of wide repute, in charge of Rev. Samuel Finley, a learned minister, its founder, who was subsequently called to the presidency of Princeton College. Among his classmates at this academy were two of Mrs. Finley's nephews, Dr. Benjamin Rush and his brother Judge Rush, with the former of whom he enjoyed a lifelong intimacy.

In 1760 John Archer graduated, A. B., at Princeton, and A. M., in 1763. Meanwhile, in February, 1762, he advertised that he would open a Grammar School in Baltimore Town. There is reason to believe, however, that this project was never initiated, as he soon afterwards entered upon the study of theology under Presbyterian auspices and progressed so far as to preach his trial sermon—which is, I believe, still extant—but, on being examined for ordination, he failed to pass the ordeal. The record of his examination by the Presbytery of New Castle is worth giving here in full, if for nothing else, as a specimen of human inconsistency as to the time-being, and fallibility as to the future. It runs to the following effect:

"30 Aug, 1764. Mr. John Archer having at last meeting of Presbetery offered himself for Tryals as a candidate for the sacred ministry, then delivered a discourse by way of specemine, on a text that had been assigned him. He was also examined at some length in the Latin, Greek & Hebrew languages, his own experience in religion & on some points of divinity; but the Pb'y not having time fully to satisfy themselves thought it best not to enter him

*Presented to the March (1899) Meeting of the Johns Hopkins Historical Club.

then on their minutes, & only recommended to him another subject for a discourse by way of specimine. Mr. Archer now delivered said discourse & was further examined on the article of experimental religion. The Pb'y upon solemnly considering the whole, do so far sustain his answers on the several Branches of Examination & particularly said Specimine, as to enter him upon further tryals, & appoint him to compose an exegesis upon the question, "*In quo fundatur obligatio moralis?*" [What is the basis of the moral obligation?] & a discourse on Romans VII. 15. ["For that which I do, I allow not: for what I would, that do I not: but what I hate, that do I."]

"6th Dec., 1764. The Pb'y proceeded to hear the exegesis given to Mr. Archer by our last, & further examined him on Logick, & asked him some questions on Divinity; & on the whole, unanimously judge that though we would gladly encourage youths who offer themselves for the sacred ministry yet think Mr. Archer through the whole course of his tryals discovers such a want of knowledge in divinity & the other particulars he has been examined on, as well as such an incapacity to communicate his ideas on any subject, y^t we cannot encourage him to prosecute his tryals for the Gospel ministry any further."

Now, it is evident from the record itself that the candidate, in the opinion of the Presbytery, was well versed in all the essential branches except as to some points of the denominational creed. And as to his "utter incapacity to communicate his ideas on any subject," it is a sufficient answer to say, that the Presbytery had just declared, as the record runs, that he was particularly satisfactory in his discourse or sermon before delivered.

Col. Nathaniel Ramsay, the hero of Monmouth, is authority for the statement that he was present when John Archer underwent his trial before the Presbytery; and that his failure of ordination was "because he did not give entire satisfaction on some doctrinal points."*

In the spring of 1765 he became a pupil of Dr. Morgan, who, in the following November, began the initiatory course of medical lectures in Philadelphia College, with Dr. Shippen as his colleague,—these two being the founders of the department of medicine in that institution, afterwards the University of Pennsylvania.

About this time he wrote as follows to his future wife:

". . . . I am daily at Dr. Morgan's shop, & on Mondays, Wednesdays & Fridays attend his Lectures—the Course is four Pistoles & a Dollar. Tuesdays, Thursdays & Saturday's Dr. Shippen's—the course, six Pistoles . . . . I have concluded to remain in Philadelphia until Spring come a year."

In February, 1767, he wrote to the same lady—then his wife—the following, which, as I believe no account of the case has ever appeared in print, may be of interest at present:

". . . . A monster was lately born in Charles Town [Cecil Co., Md.] in the shape of two negro children in one. They have two heads, four arms & four legs, distinctly & regularly formed; they are united from the shoulders to a little below the navels & lie in each others' arms, and each having its arm under the other's head. This wonder of nature is now in Town.—I saw it yesterday. It has been opened, & the bowels are distinct & separate, as in two infants, ought to be. One of them presented near half an hour to the world before the other & was alive at its first appearance. The midwife gave up the delivery, which was afterwards executed by the owner of the wench, who himself understood nothing of the business. The owner is John Kirkpatrick of Charles Town."

On the 6th April, 1767, he wrote to his wife:

". . . . It will be some time before I can go down [to Maryland.] Dr. Morgan's Lectures will not begin before May 20th, & I am determined to hear them to the last. Dr. Bond's will not begin until y^e last of May.* However, I shall not wait for his. . . . . Dr. [Robert] Harris has taken Dr. Bayard as a partner in the drug business & Practice of Physic."†

April 21st, 1767, he writes to the same:

". . . . All prospect of entering into partnership with Dr. Boyd of Lancaster is vanished. Therefore I still have the wide world to seek where to pitch my tent."

In the summer of that year—between his second and third course of lectures—he proceeded to put into practice, among the denizens of New Castle County, Delaware, the professional knowledge which he had acquired. He, no doubt, gave this locality a temporary preference over the place of his nativity merely because it was much more convenient to Philadelphia, where his medical education was yet to be completed. His ledgers show that during his two years residence in Delaware he attended 212 families, receiving for his services about $1000, nearly three-fourths of it in money—the remainder in rent, produce or labor, including the work of mechanics. About one-third of them paid nothing at all. There is, in his ledger, kept while practising in Delaware, a prescription, which, though a little humiliating, it is the duty of the faithful biographer to record. It may perhaps be condoned, for the reasons that it is the only one of the kind in all his ledgers, and that it antedated his diploma—though, truth to say, only a few days.

The entry runs in this wise:

"Rev. Mr. Elihu Spencer Dr. 1768 June 6th
Milleped: pp^t for your Daughter."

This, of course, was to be taken in one dose; and there being no other prescription entered for that particular patient, though the attendance upon the family was quite extended, it is fair to infer that it either killed or cured. At that date such revolting prescriptions were nearly out of vogue, though once an every-day matter. Dr. Buckler Partridge, who came from England and practised in what is now Harford county, Md., from 1715 until about 1750, was wont to dose his unfortunate patients—as his prescription book still extant amply shows—not only with millepeds, but with "juleps of goat's blood," "powdered bees," and "dried viper's flesh"; and, as if these were not enough in themselves, his favorite vehicle for conveying them into the wretched patient's stomach, was a copious draught of nauseating "frog-spawn water." And yet Dr. Partridge was the leading physician of his day thereabouts. Even "Hooper's Medical Dictionary," a standard

*Col. Ramsay made this statement to my father, Dr. Robert H. Archer, one of John Archer's sons, who at that time was his family physician and who communicated it to me.

*Dr. Thomas Bond at this time delivered clinical lectures at the Pennsylvania Hospital. In May, 1768, he was elected to the chair of clinical medicine in the new institution.

†Dr. Robert Harris was a brother of Dr. John Archer's wife. He was a very prominent member of the profession.

work of only fifty years ago, contains the following prescription, which, for sheer loathsomeness may perhaps be said to exceed them all: "For very obstinate jaundice: The expressed juice of 40 or 50 living millepeds given in a mild drink."

After attending his third course of lectures—Dr. Kuhn having meanwhile been added to the faculty—the degree of Bachelor of Medicine was conferred upon him and nine other students on the 21st of June, 1768. This being the first occasion in America of the conferring of a medical degree, it was to be expected that even under ordinary circumstances some contention would arise as to who should be the recipient of the very first honor of the kind in the new world. Unfortunately in this particular case the decision was greatly complicated by the fact—which soon became known—that the faculty of the College, most of whom had been educated in England, wished to show their respect for the mother country by conferring the first diploma upon the only Englishman among the candidates—Jonathan Potts. But, with the recent attempted humiliations of the odious stamp-act fresh upon their memory, the glorious nine regarded this loyal concession as a downright insult. After a vain protest, they threatened to demand certificates of their successful examination,—armed with which, they would secure the coveted parchments from the neighboring College at Princeton. That settled the question. The thought of losing all except one of their graduating class, and he a foreigner, was more than the intensest loyalty could have endured. The rebels were told to arrange the matter among themselves. This they did by compromising upon the alphabetical order. It may seem a little strange that this was preferred to a decision by lot,—usually the fairest way in such cases. There is little doubt, however, that they were afraid a trial by lot might possibly give the prize to the Englishman, after all their contention; whereas, by the alphabetical plan, as they must have known at a glance, this was impossible. It is greatly to their credit, however, that they generously allowed him to come in several grades higher than he would have attained by the plan agreed upon if strictly observed,—the following being the order of graduation as given in the official catalogue: "John Archer; Benjamin Cowell; Samuel Duffield; Jonathan Potts; Jonathan Elmer; Humphrey Fullerton; David Jackson; John Lawrence; James Tilton; & Nicholas Way."

Declining an offer of partnership kindly extended to him by his preceptor, Prof. Morgan, Dr. Archer returned to his native county in July, 1769, where he practised his profession for nearly forty years. These duties, however, did not prevent him from taking part with characteristic energy in the great struggle for liberty. He was chosen in November, 1774, a member of the first local Revolutionary Committee and of the several successive committees, until August, 1776. Meanwhile, in December, 1774, he enrolled the first militia company of the county, was commissioned its Captain and drilled it regularly until called to other duties in the patriotic cause*—though forced to use a speaking-trumpet, his voice having been permanently reduced to a hoarse whisper by a severe throat disease. The sword which he wore on these occasions is still in possession of a branch of the family. But the trumpet is long since lost, or mouldered away. For many years his sons were wont, on every 4th of July, to bring it down from among the rubbish in the old garret of "Medical Hall" and make the premises ring with the re-awakened notes of Independence.

In January, 1776, he was commissioned Major of one of the local Battalions of Militia.

In August of the same year he was elected a member of the convention which framed the Constitution of the new State and the Bill of Rights.

In 1777 he was appointed one of the Commissioners of Peace for Harford county, who constituted the County Court, and held the office for thirteen years, when the court was reorganized on a different basis. During part of this time he was also one of the Judges of the Orphans' Court.

In November, 1776, he was chosen as an Elector of the State Senate—the senators being then chosen by an electoral college.

During all this time, as his medical ledgers, still extant, amply show, he practised his profession, not only throughout several counties of his native State, but also in the adjoining State of Pennsylvania.

After the Revolution he devoted himself exclusively to his professional duties. Facilities for acquiring a knowledge of the medical profession being then extremely meagre, students from far and near placed themselves under his tutorage. He built a substantial stone office a few steps from his residence, "Medical Hall," and for a quarter of a century it was seldom that half-a-dozen young men were not under his instruction, one or more of whom, after a certain course of reading, would accompany him on his tedious professional rounds, hearing from him veritable clinics at the bedside, and on their return compounding under his directions the necessary prescriptions. After a longer apprenticeship, he intrusted exclusively to their care the less obscure and complicated cases, whose symptoms they noted and reported to him. Indeed, but for their subsidiary aid, he could not possibly have done justice to one-half the patients under his care. In several of his ledgers the visits and prescriptions of his various students are noted by their initials. From 1790 to 1794 thirteen students are thus noted, most of whom were afterwards in active practice in various parts of the country. And there were probably others. His students formed the first medical society of Harford county, which met at stated periods in the office at "Medical Hall." Some of the papers read on these occasions are to be seen, in manuscript, in the library of the Medical and Chirurgical Faculty.

In 1797 he was chosen Presidential Elector at large on the Jefferson ticket.

He and his son, Dr. Thomas Archer, were charter members of the Medical and Chirurgical Faculty, January, 1799. In the following June he was chosen one of the Examiners; and in 1802 and 1803 was on the Executive Committee.

In May, 1799, he wrote,* " . . . . Some person without my

*I have often heard my father state the facts above given, which he had from his father, the subject of this sketch.

*All the letters quoted from in this sketch, unless otherwise noted, are addressed to the subject's son, Dr. Robert Harris Archer.

Knowledge hath published that I am a Candidate for the important Place of Elector of the President. It is not my Wish, as I am certain a popular Character in Baltimore county would have a greater Chance than I could be expected to have."

In 1800 he was elected a member of Congress; and two years later he was re-elected. While a member of that body the physicians of Washington and vicinity availed themselves of his professional advice in cases which had baffled their skill. It was at this period that he discovered the interesting fact, that in the early stages of whooping-cough, vaccination will so modify the disease that its course is rendered comparatively harmless, even in winter. He also contrived and used, in cases of fractured femur, the apparatus which afterwards became famous as "Physick's modification of Desault's apparatus."

On the expiration of his second congressional term he resumed the practice of medicine. But the following, from one of his letters written at the seat of government, in April, 1802, more than hints of the strong man's failing vigor: "I shall be a very valetudinarian, and in my old days begin to investigate what will best agree with me, who once knew no difference in any kind of diet; who could eat anything without fear that was suitable for nutrition. But those days are gone with the days before the Flood."

A few years later, partial paralysis, the sequel of an attack of rheumatism following a severe fall, unfitted him for the discharge of his professional duties. He relinquished all active pursuits and his health gradually declined. The end came on the 28th September, 1810, when he expired suddenly, in the 70th year of his age, at his home, while sitting in his easy chair,—an asthmatic ailment for some days before his death precluding a recumbent posture.

A marble slab over his grave in the burying-ground of the Presbyterian church at Churchville gives merely the dates of his birth and death. Of that church he was a member for nearly half a century.*

Extracts from a few of his letters (some two dozen of which are still extant, written in great haste, nearly all of them to his son Dr. Robert Harris Archer, then practising his profession in Baltimore), will give glimpses of him not only as a physician, but as a parent, a Christian, a patriot, and a politician. In a letter of date May 31, 1798, he advances the theory, that—

"While the country in this section, which I distinctly remember as far back as 1750, was covered with Oaks, Willows, Maples, Beeches, Alders, Chestnuts, etc., which are Astringent and Antiseptic, the rain which ran off from their Roots into the Streams & Swamps prevented Sickness, as Salt in the Ocean prevents it. And in proportion as the Country was denuded of these natural Antiseptics, Fevers prevailed. In other words they prevented Putrescence of both vegetables & Insects, which is the Cause of Remittent & Intermittent Fevers. . . . . Crowded & dirty Cities are nurseries of Putrefaction."

"July 12, 1798. . . . . The Physicians of Philadelphia & Baltimore now succeed in curing Croup with Rad. Senekæ, though the disease was before almost *opprobrium Medicorum*. But they are so obstinate, they will not acknowledge it, because they were not the first to discover the remedy. I was informed when in Philadelphia that Dr. Kuhn has not lost a Patient since he has used the Seneka. I would, before I close these observations, just remark that the cure could be expedited by dipping a cloth in a hot decoction of the Seneka, to be held frequently near the Patient's mouth & nose, that the vapor may be inhaled & come in contact with the membrana trachealis. This I would not communicate to any of the unbelieving gang—*Si volunt desipi, desipiantur*."

In a letter without date, but probably written in 1798, he says:

". . . . The proper time for repeating the Cortex Peruviana I have found from experience to be the 7th or 8th day. Dr. Moons [one of his former students], in his Thesis [at the University of Edinburgh], has not given me credit for this practice, as he should have done. It is not to be found in any practical work before that date, unless in a very vague way—no precision is determined—no time set apart for taking it, to counteract the Return of the Fever.

"This is a hasty scribble, & as such you will take it."

"Harford County, Sep. 4, 1800.

". . . . I am of the opinion that the seat of the disease [yellow fever],* is in the primæ viæ—that the septic gas impregnates the saliva, water, & especially meats; that taken into the stomach it acts as a ferment, & according to the concentration of the Gas, is the violence of the Disease. Its state of concentration may in general be judged by the color of what is vomited & the Fœtor of the motions. The different degrees are *green, brown, coffee-coloured & black*. The nature of this Gas, from the experiments I have made, is an acid; therefore, this year I have exhibited Absorbents very freely by Glyster, with occasionally Laxatives & Laxative Glysters until the motions ceased to be fetid. I have given the Absorbents every two hours & ordered Glysters every four hours with the happiest effect. When the excessive stimulus is taken off the fever soon intermits & the Bark is given with the best results. The lowness of the Pulse is from the excess of the Stimulus in the Intestines; when this is corrected, the pulse becomes fuller. Bleeding, in some cases, may be advisable to lessen the effects of stimulus; otherwise, it is not indicated. When it is used very largely the Patient may die by great Debility. Cathartics are absolutely necessary, not only to remove the Septon, but to carry the Absorbents soon through the bowels. A large dose of Absorbents should be given with the Cathartic, & a Dose after every Motion. Care should be taken that the Patient does not become costive, as the Absorbents are apt to be formed into hard Excrements difficult to evacuate.

"I have not time to be more particular. I could show the rationality of this method—that it accords with Philosophic Principles. Should it succeed with you, it will give me Pleasure. It will be a new mode of treating the Fever; & the cause of the Fever will be better known."

His treatment nearly one hundred years ago, as above given, was almost identical with that so strongly recommended by recent writers,—among them Dr. Sternberg, Surgeon-General

*Of him, Dr. Mitchell of New York, said: "He left the world full of years and full of honors. His life was fully devoted to the service of his fellow-creatures and to the glory of the great Redeemer. As a physician he was beloved in a peculiar manner by all who knew him. His early piety, ripening into maturity with his years, enabled him to meet death with persuasion of his acceptance with God."

*The son to whom this letter is addressed was at the time Physician to the special Yellow Fever Hospital in Baltimore, and narrowly escaped death from the disease a year or two later.

of the United States Army, who also expresses the same view of the nature of the disease: namely, that its seat is in the intestinal canal and that alkalies (absorbents) should be administered to neutralize the acids which favor the production of yellow fever germs.*

"Harford County, Sept. 19th, 1800.

"I am sorry to hear of the deplorable condition of Baltimore. . . . . We have had two or three cases of Yellow Fever that originated in the county, & two or three from Baltimore have died. One of them refused to take medicine. One of them was in a cold Sweat, & vomiting dark, coffee-coloured Bile; arms and legs with purple Spots—was cured with Absorbents, opium, laxatives & Bark—absorbents & Opium given very freely—laxatives to prevent Constipation, & Bark as a Tonic."

The following was also written in September, 1800:

". . . . I am anxiously concerned for you, dwelling, as it were, in the midst of Death. Such chastisement by Divine Providence should lead the contemplative mind to God & our Saviour. . . . . I hope you will be careful to avoid bad company of all Sorts, & when time & the situation of your Patients will admit of it, you will, on Sundays, attend some place of Divine Worship. The neglect of our Worship of the Supreme Being is the forerunner of the Sinking of a good Moral Character. When the Attendance on the Duties required by the Christian Religion is neglected, there is then a gradual Decline from one degree to another, until we are even brought to deny the Reality of that Religion & turn Deists. The Christian Religion holds forth Rewards & Punishments—eternal Happiness or Misery—on the purest Principles for the good ordering of Society while here, & our eternal Welfare hereafter. Relinquish the system of revealed Religion, then, on what foundation can you build your hopes of Futurity? The Answer is plainly, On none—or on a State of uncertainty. Miserable state—to be lost in Doubt & Difficulties in a matter that should so greatly concern us. But perhaps some may say, 'Reason is a sufficient guide.' But six thousand years should convince us that, unaided by Divine Revelation, Reason has run into every extreme, every folly, every wickedness. Has not Reason prompted the world in different ages to worship men, beasts, stocks, stones, & even to sacrifice their children to appease a senseless Deity & quiet their Consciences? It may be said that this was not consistent with Reason—it was madness, folly & stupidity. But why do we say so? Because Divine Revelation hath enlightened us: and even Infidels & unbelievers are benefitted by the rational Truths contained in the Holy Scriptures."

Washington, Feb. 26th, 1802.

". . . . From what I am now going to write, you will doubtless think that I make Absorbents a grand Catholicon in Medicine. If you did, it would be nearly true. Since I have been here, I have directed their use in a variety of cases, & they have never disappointed my expectations. The Patients have been relieved, & if they laboured under a Fever, the fever, after the use of Absorbents, was of short duration; & the Effect produced is founded on the most rational Principles."

Here are extracts from two letters written in Cecil County, in September, 1799, in which, although Æsculapius occasionally flits before us, he is soon fain to hide his diminished head amid the distracting hubbub of war and politics. Could they now be read by the Presbytery which pronounced him "utterly incapable of expressing his ideas upon any subject," it is not impossible that that venerable body, while they might not see in the letters anything to cause them to regret his absence from the ministry, might be disposed to assign some other reason for excluding him therefrom.

". . . . The news tells us Republicanism is expiring. This comes from the hotbed of Royalty. I am sure, if I admit one fourth of what they relate, I should have a Right to claim by Act of Supererogation. I believe it is right the French should be drubbed. I do not mean finally, but as a chastisement for their many errors & cruelties. [This refers, of course, to the excesses of the French Revolution.] They have been as despotic as the Tyrants they have opposed, & royal Gold has showered down on numbers of them, that they might betray, or at least do acts unworthy of true Republicans. I believe that the King of France was the tenth Horn of the Beast—if so, it was the first that was to be destroyed. Others are also to be destroyed. . . . Then will the Beast & Kings & Emperors fall together into the Bottomless Pit—that is, a State of Neglect—degraded, despised, & at last forgotten."

It is rather amusing that one who, on all occasions, was utterly fearless in expressing his political opinions, should close his letter in this abruptly subdued tone: "Although you may speak of Politics with your Friends, I think you should be cautious that you offend none—no, not a little one."

In the other letter, of date a week later, he writes:

". . . . When I wrote you last, I stated, that from the Head of Tide upwards, the bilious Fever was general, but that it did not extend far from the River. I can now say it has gone up the Creeks & even the Branches that empty therein. It is like the murderous Suwarrow, who goes where he is not wanted & destroys without mercy; but it is unlike him in this particular—it spares neither Aristocrat nor Democrat, neither Republican nor Monarchist. The Friend to America & the Friend to Britain are all involved in the common fate of the Country.

"What do the dear, dear Friends of Britain think of the Condemnations at New Providence & Jamaica? I trust it will become an Emetic—that they may emit their Monarchy & their Aristocratic Principles. . . . Will America tamely say that the French are the only Pirates, Murderers, Plunderers, Floggers in the World, when, in Nassau, there has been condemned of American Property in the Month of August to the amount of 293,000 Dollars? Will not this open the Eyes of Americans? Why was it done? Because the President has dared to appoint Envoys to treat with France?

In haste, I am," &c.

A sketch of him, which I have not seen, is to be found in Lanman's "Biographical Dictionary of the American Congress." In 1826 Dr. Revere, contemplating the publication of his "Biography of Eminent Physicians of America," wrote to one of Dr. Archer's sons for facts in his career. The following is an extract from a fragmentary sketch prepared in compliance with the above request, but never sent, being afterwards found among the son's papers:

"Dr. John Archer proved himself an able physician during an arduous practice of about half a century. He was successful in many of the important operations in surgery; and as an accoucheur, for judgment and dexterity, was not surpassed by any who had gone before him in the medical world." . . .

In "Hooper's Dictionary, edited by Samuel Ackerly, M. D.," may be seen the following:

"Archer, John, M. D., of the State of Maryland: a celebrated practitioner of medicine. Many contributions of his on various subjects of medical science are to be found in the New York *Medical Repository*. He was the first to introduce seneka snakeroot (*polygala senega*) as a remedy in croup. He died in 1814."

*Md. Medical Journal, November, 1889.

The date of his death here recorded is, however, incorrect. It should be 1810. His degree, as given above, is also erroneous; it should be M. B. He was "Doctor" only by courtesy,—having never applied for the second degree. The institution in the first year of its existence adopted a rule that two degrees, M. B. and M. D., should be conferred with three years intervening. In 1792 this rule was discontinued and only the degree of M. D. was conferred. The official catalogue states that very few applied for the Doctor's degree during the early years of the college.

As regards his contributions to the *Medical Repository*, referred to by Dr. Ackerly, I have seen only two of them, describing cases which occurred in his own practice. One was that of a white woman who gave birth to twins—one white, the other black. She was the wife of a toll-gate keeper on the turnpike leading eastward from Baltimore. She confessed that after her husband had left her bed early in the morning, a negro entered her room before she had risen, with whom she had connection. The other case was that of a man whose stomach was cut open by a cobbler with a shoe-knife—the cornbread and cabbage which he had recently eaten rolling out upon the floor. The cobbler sent at once for Dr. Archer, but, being terribly frightened by his own act, sewed up the wound with a wax-end. The doctor let it remain as he found it, and the patient recovered.

His love-letters, written while pursuing his medical studies in Philadelphia, though silly enough in their exuberant endearments, are not a whit more so than those of the average man on such inevitable occasions. Fortunately, he attempts *poetry*—the *sine qua non* of the infatuated lover—but once; and the quality thereof shows unmistakably that he knew infinitely more of Medicine than of the Muses.

In October, 1766, while pursuing his studies, he came on to his native county and married the lady upon whom these endearing terms had been lavished. She was a daughter of Thomas Harris, of Pennsylvania, who had removed to Maryland. He was a member of the family that founded Harrisburg. Among his descendants of the present generation is the illustrious astronomer, Prof. Simon Newcomb. Thomas Harris, in his old days, returned to Pennsylvania and died amongst his kin in Tuscarora Valley, in 1801, over one hundred years of age—*having lived in three centuries.*

Dr. Archer, in his will (dated Sep. 23d, 1808, signed and sealed 29th Dec., 1809, and proved 12th Jan'y, 1811), devised all his estate, real and personal, to his wife Catherine, as trustee for their children (five sons) during her life or widowhood; on her death or marriage, to be divided equally among them. His real estate consisted of about 700 acres of land in one body. He directs, that as there are many persons indebted to him as a physician—many of whom cannot pay without distressing them—"my sons, who are my executors, are directed to make the following entry in cases of such as they think are unable to pay: 'Forgiven by order of the Testator.'" Accounts to the amount of several thousand dollars are so credited in such of his ledgers as are still extant. His male slaves are to be free at thirty years of age, and the females at twenty-five.

Numerous anecdotes have been handed down, which will serve to illustrate some of the more salient points of his character.

A neighbor, who was widely known to be more ambitious of fine display than of satisfying the just demands of his creditors, undertook once (and only once), to rally the doctor on the mean appearance of his badly-groomed and awkwardly-gaited Rosinante,—and, to say truth, he was not over-nice in his selections of horseflesh. "Every hair on this horse is paid for," was the gruff, though well-merited, rebuke.

At a mixed political gathering, he got into a dispute with the sheriff of the county on some exciting party issue. The latter, finding himself worsted in argument, suddenly changed his tactics and came down upon the doctor with brute force, whereupon the assaulted party hurled the pugnacious dignitary to the ground, and was pounding him according to his idea of justice—so that the singular spectacle was presented of one man breaking the peace, whose peculiar duty it was to preserve it, and another inflicting wounds, who had made the art of healing them his lifelong study. Mr. Sheriff, however, soon cried, "Enough!" "Do you pretend to know the dose better than the Doctor, you rascal?" was the uncompromising reply; and it was not until after an additional cuff or two that the restraints put upon the sheriffalty were removed.

Soon after being placed upon the Committee of Observation, in 1775, he met in the public road, on horseback, an influential Tory of his acquaintance, who accosted him in a very excited and insolent manner, when the following colloquy took place:

Tory.—Well, sir, I understand you are part of what is called a Committee of Observation?

Doctor.—I am, sir.

Tory.—And pray, sir, what's the purpose of the d——d thing?

Doctor.—To keep an eye on such scoundrels as you; and, if necessary, thrash them.

The Tory, a powerful man, now leaped from his horse and advanced, as if eager for the fray; but finding the doctor was operating on a corresponding line with characteristic energy, he remounted without loss of time and rode off.

He was wont, when coming upon a party engaged in long-bullet rolling—then much in vogue—to dismount and take part—with the invariable result of beating them all.

Occasionally, when nearly worn out by professional duties, he would steal off to some hospitable home, where he was sure of a welcome, and remain until rested,—not even telling his wife of his hiding-place. A favorite resort of the kind was the home of Mr. Philip Thomas, on Mt. Ararat in Cecil county. This gentleman, (at one time, I believe, a member of of Congress) whose family he attended, was always glad to have him as his guest, and was wont, when the doctor signified his intention of leaving, to place in his way several interesting novels—knowing his weakness for that class of literature. The invariable result was that the guest tarried until he had devoured their contents. This he did eagerly, but in a rather peculiar way—always beginning at the end and reading the events backward.

In his Ledger "I" is:

"Philip Thomas, Esq., Dr.

1797. Nov. 21st. To inoculating twelve of your Negroes, £9.

Nov. 27th. Ad inscrend: Infect: variolæ in Filios (5) et Africanos (32)

To staying with your Family (when inoculated) by your particular request, three weeks - - - - - £29.15"

The doctor's good wife, naturally enough, resented to some extent these prolonged periods of absence in unknown parts. On one occasion, when a stranger appeared at "Medical Hall," and inquired if Dr. Archer lived there, she sarcastically replied: "A man of that name gets his washing done here."

On returning, after one of those prolonged hidings, and entering the office, he found no one there; but on the study table was a pack of cards. Though card-playing was decidedly against the rules, he simply wrote on one of them, in his unmistakable chirography, "This is neither Van Swieten, Boerhaave, nor Cullen." No "devil pictures" were ever afterward seen, at least by him, in that office.

Beneath his manly character and strong intellect ran a vein of superstition, as the following family tradition will show:

About the year 1777 he dreamed, for several nights in succession, that the house in which he was then living—his ancestral home—was struck by lightning and burned to the ground. He forthwith built a house on a distant part of the farm, selecting a very low situation, doubtless to diminish the risk from lightning, and moved into it with his family. He never afterwards would allow the older house to be occupied, although it was commodious and in good repair. The dream was never fulfilled; and it was but a few years ago that the last vestiges of the abandoned edifice disappeared by slow decay. The home to which he removed is still in possession of a branch of the family and retains the name which he so appropriately gave it.

In person Dr. Archer was considerably above the medium height, possessing great bodily strength, and was endowed with a large share of both moral and physical courage. His mind was of the combative order; and although a throat disease had sadly broken his voice—perverting it into a loud, gruff whisper at its best, for the remainder of his days, and totally unfitting him for public speaking—he did not allow the affliction to exclude him entirely from the humbler field of personal controversy. With a vigorous intellect and a good education, he entered zealously the political arena, then in a state of excitement far surpassing that of our own day. Though unflinchingly earnest in the support of his party, he was too independent to degenerate at any time into the demagogue or place-seeker—too honest to be led by public opinion or to allow ambition to swerve him from his convictions of right—one of those bold, self-reliant natures, who, notwithstanding they possess infinitely more of the *fortiter in re* than of the *suaviter in modo*, exercise over their fellow men great influence, being admired for their strength of character and honored for their incorruptible integrity.

Had he applied himself exclusively to his profession, and especially had he been a more frequent wielder of the pen, he would doubtless have left his impress on the medical literature of the country. But being particularly averse to the mechanical part of writing, and being not of those who "seek the bubble reputation even in the" (mortar's) "mouth," his fame as a physician must depend mainly on a few desultory pages hastily thrown off amid the distracting hubbub of war and politics. While the effect of this will be to blend with the image of the skillful physician that of the stern old tyrant-hater, it must impart to his memory a dash of that interest which will ever, it is to be hoped, cling around the names of the prominent participants in our war for liberty.

Dr. Archer had ten children, four of whom died in infancy. Of the six survivors—all sons—five selected medicine as their profession and studied under their father. The youngest of these five, George Washington, died while pursuing his studies. The other four, Thomas, Robert Harris, John and James—named in the order of age—completed their studies at the University of Pennsylvania and practiced their profession. James removed to Mississippi, where he married and died while still a young man, leaving no child that reached maturity. The remaining son—the youngest of all—Stevenson, studied law and became Chief Justice of Maryland, member of Congress, and, by President Madison's appointment, in 1817, Judge of Mississippi Territory, with Gubernatorial powers.

Four of Dr. Archer's sons left numerous descendants, among whom the ancestral proclivity for a roving life seems not yet to have died out. Although many of them still reside in Maryland, a greater number have gone forth to other parts. Some of them live in Virginia and Pennsylvania; several in Texas; and they are becoming quite numerous in Mississippi and Tennessee, with a few in Louisiana and even in the remote State of Washington. Gen. James J. Archer who commanded a brigade under "Stonewall" Jackson in the war between the States, and died in Richmond in 1864, was a grandson of the subject of this sketch; Stevenson Archer, another grandson, was elected to Congress for several terms from the same district which was formerly represented by his father, Judge Archer and his grandfather; and many others of the third and fourth degree of kinship served with distinction in the Southern army.

Dr. Archer sat for his portrait in Baltimore about 1802—the artist being a Mr. Harrison. It was painted for his son, Dr. Thomas Archer. Dr. Robert H. Archer engaged the artist for a replica, which was at once executed, and some time afterwards a copy was made of this replica by another artist for Dr. John Archer, Jr. They are all, I believe, still in existence. The replica, is now about to be presented to the Medical and Chirurgical Faculty of Maryland. Its original owner always said it was much the best of the three portraits. And he mentioned to me as proof of its striking resemblance to the original, that many years, after his father's death, on seeing it in an unusual place and in a rather dim light, he thought, for a moment, that it was his father himself—or, rather, his apparition. A copy of this replica also hangs in the court-room at Bel Air. It was recently taken by a Washington artist, and is very creditably done.

FEMALE POISONERS—ANCIENT AND MODERN.*

By Charles C. Bombaugh, M. D., *Baltimore, Md.*

One of the commentators on the works of the ancient Greek writers, says: "Among the Greeks, women appear to have been most addicted to criminal poisoning, as we learn from various passages in ancient authors." The author most frequently quoted is Antiphon, whose discourses on judicial procedure in Athens in criminal prosecutions, which appeared about four hundred and thirty or forty years B. C., are still preserved. Dr. Witthaus, the toxicologist, in repeating this observation, supplements it with an assumption which may or may not be warrantable. He says: "Women appear to have been most addicted to the crime of poisoning in the Grecian period, *as they are at the present time.*" A repetition may also be noted in Dr. Smith's Dictionary of Antiquities, under the term *Veneficium*, the crime of poisoning. Referring to its frequent mention in Roman history, Smith says: "Women were most addicted to it."

This crime has furnished a theme for novelists and dramatists all the way from the Poison Maid or Bisha-Kanya of India in the Hindu story of the Two Kings; in the *Secretum Secretorum* of Aristotle (XXVIII); and in the *Gesta Romanorum* (XI), to Nathaniel Hawthorne's story of Rappacini's Daughter. Our modern fiction writers, however, generally select their culprits from the male sex, as for example, Charles Dickens in his "Hunted Down," and Charles Reade in "Put Yourself in His Place." Frequent references in Shakspeare's dramatic works, such as the poisoning of Regan, daughter of King Lear, by her sister Goneril, or the removal of Leonine by Cleon's wife in Pericles, show that this, as all else in human character and conduct, could not escape the grasp of the master spirit. He makes Richard II say:

> "Let us sit upon the ground,
> And tell sad stories of the death of kings:—
> How some have been deposed, some slain in war;
> Some poisoned by their wives, some sleeping, killed;
> All murdered."

In Cymbeline, the king's physician, in announcing the death of the queen, surprises and startles the monarch with the revelation of her fiendish purpose to destroy both him and his daughter by a former queen, in order to clear the way for her ambitious projects:—

> "Your daughter, whom she bore in hand to love
> With such integrity, she did confess
> Was as a scorpion to her sight; whose life,
> But that her flight prevented it, she had
> Ta'en off by poison.
> * * * * *
> "More, sir, and worse, she did confess she had
> For you a mortal mineral, which, being took,
> Should by the minute feed on life, and lingering,
> By inches waste you: In which time she purposed
> By watching, weeping, tendance, kissing, to
> O'ercome you with her show," etc.

Sanskrit medical writings, which date back several hundred years before Christ, testify that the Hindus of that early period were familiar with poisons—animal, vegetable and mineral—together with their antidotes. Passages like the following show that criminal poisoning was guarded against:

"It is necessary for the practitioner to have knowledge of the symptoms of the different poisons and their antidotes, as the enemies of the Raja (sovereign)—bad women and ungrateful servants—sometimes mix poison with food."

To various warnings which follow is added the precaution, "Food which is suspected should be first given to certain animals, and if they die, it is to be avoided."

There is abundant evidence that the Persians and Egyptians, as well as the Hindus, were familiar with poisonous substances, such as the venom of serpents, the hydrocyanic acid of the peach kernel, mineral corrosives or irritants, and vegetable narcotics. In the Grecian mythology there is occasional reference to the removal of inconvenient husbands by goddesses who are familiar with the deadly properties of aconite. The manner in which Ulysses neutralized the enchantments of Circe, as related in the Odyssey, shows that attention was given at an early period to the application of antidotes. Homer also tells us of the voyage of Ulysses to Ephyra,

> "to learn the direful art
> To taint with deadly drugs the barbed dart;"

and Ovid relates that the arrows of Hercules were tipped with the venom of serpents, differing in that respect from the modern South American arrow poison, curare, which is a vegetable extract. Poisoned arrows are referred to in the sixth chapter of Job, but there is no reference either in the Old or the New Testament to the use of poison for taking away life.

Of the poisons used in Greece in the historical period, and mentioned by Nicander, the favorite appears to have been hemlock. Whether it was the conium maculatum, or the cicuta virosa or aquatica, is a matter of controversy. Haller contends that the water-hemlock was the conium of the Greeks. It may be noted, however, that Pliny says that the generic term Cicuta was not indicative of a particular family of plants, but of vegetable poisons in general.

For the first circumstantial report of an instance of the class under consideration, we must go back to Antiphon, who, as already noted, lived more than twenty-three centuries ago. In one of his discourses he gives a short speech, entitled "Against a Stepmother, on a Charge of Poisoning." It treats of a case which was brought before the famous court known as the Areopagos. The speaker, a young man, is the son of the deceased. He charges his stepmother with having poisoned his father several years before through the instrumentality of a woman who was her dupe. The deceased and a friend, Philoneos, the woman's lover, had been dining together, and she was persuaded to administer a philtre to both, in hope of recovering her lover's affection. Both the men died, and the woman—a slave—was put to death forth-

* Read before the Johns Hopkins Historical Club, Dec. 12, 1898.

with. The accuser now asks that the real criminal—the true Clytemnestra of this tragedy—shall suffer punishment.

About a century later, the most prominent as well as the most remorseless of the Greek poisoners was Olympias, the wife of Philip of Macedon and mother of Alexander the Great. This restless intrigante compassed the death of Aridæus, a natural son of Philip, his wife Eurydice, Nicanor, and many of the leading men of Macedonia who were inimical to her interests. To those who were imprisoned she allowed the choice between a sword, a rope, and a cup of hemlock; for others there was only the quieting effect of the potion that ended the career of Socrates.

Roman history abounds with cases. While there is reason to believe that in the time of the Empire unwarrantable suspicions were sometimes entertained and false accusations were sometimes brought, we have accounts of numerous murders by poison, the historical proof of which is beyond question. It is also likely that then as now there were many cases in which, in spite of moral certainties and circumstantial evidence, there was failure to convict. In the absence of the facilities afforded by modern scientific methods for the detection of crime, the law officers were correspondingly powerless to intervene, and many criminals escaped with impunity. At the same time there were occasional convictions that were based on mere suspicion. For example, Hostilia, the wife of the consul Calpurnius, accused of poisoning her husband, was thus condemned. Sometimes under the pressure of public clamor and reprobation, offenders were driven to suicide, as in the case of Piso and his wife Plancina, who were charged with poisoning that popular favorite, Germanicus, the nephew of Tiberius and brother of Claudius. Plancina's tutor and accomplice was a notorious poisoner named Martina. More renowned as a professional poisoner of the first century of the Christian era, and held in greater abhorrence was Locusta. Among the victims was Claudius, who was poisoned by order of Agrippina, and Britannicus who was similarly disposed of by order of Nero. This monster loaded Locusta with gifts, and made her teach a selected class her processes, in order that her art might be perpetuated. In this nefarious business, Tacitus, in his Annals, leaves us to infer that slow and wasting poisons were usually employed. He echoes the prevailing belief of his time that skilled poisoners could regulate the effect of their doses with mathematical precision. If so, we shall have to classify their accomplishment among the "lost arts." Our only approach to it is in the latent or dormant condition and eventual outbreak of the specific virus of rabies, yet as the period of incubation runs from a few weeks to several months, we cannot predict the day of impending doom. Theophrastus says that the sorceress used aconite, which makes all the more puzzling his statement that she could regulate the toxic process so as to kill in a month or a year. There is reason to believe that combined with the aconite was the juice of the poppy.

With the secret help of such professionals as Martina and Locusta, the list of ladies connected with imperial and aristocratic families who, from motives of revenge, illicit love, political intrigue, or cupidity, destroyed those who were in their way, is a lengthy one. For the most sensational of wholesale poisonings we must go back to the period of the conquest and the acquisition of Italian territory, three centuries B. C. We learn from Livy that many of the leading men of Rome were carried off with a seizure presenting such similarity of symptoms that it was regarded as the outbreak of a pestilence. It leaked out, however, through information given to the authorities by a slave girl, that these numerous deaths were due to poisons prepared and administered by Roman matrons. Following the clue thus given, about twenty matrons, including Cornelia and Sergia, who belonged to patrician families, were surprised in the act of preparing some drugs over a fire. Upon their strenuous assertion that the preparation was harmless, the magistrates compelled a test of sincerity by drinking it, and thus they all perished. Proceeding upon additional information as to the extent of the mischief, one hundred and seventy Roman matrons were afterward convicted and punished.

From the time of the Lombard invasion to the appearance of the Borgias on the scene of action, in the 15th century, poison was the frequent weapon of the oppressor and the protection or revenge of the oppressed. Lucretia Borgia is said to have shared in the atrocities of her infamous father and brother, though this is questioned by the modern iconoclasts who are bent on reversing history as we have been familiarized with it. During the Renaissance in Italy, poisoning became a fine art; the victims were numbered by thousands, and the female fiend was everywhere in evidence. In the seventeenth century the use of poison as an instrument of secret murder became so common as to warrant a violation of the confessional. In 1659 the priests of Rome informed the Pope, Alexander VII, of the great number of poisonings revealed to them in the confessions of young widows. Investigation led to the discovery of a secret society of women which met at the house of Hieronyma Spara, a fortune-teller, who dispensed an elixir or "acquetta" for the dissolution of unhappy marriages. After a large number of victims had been sacrificed, La Spara's practices were detected through cunning police artifice. She and thirteen of her companions were hanged; others were publicly whipped half-naked through the streets of Rome, and those of the highest rank were banished.

There was a similar society of married women in Naples headed by a Sicilian woman named Tofana, who devised the arsenical solution known as the Aqua Tofana, Acquetta di Napoli, or Aqua di Perugia. It was usually labeled "Manna of St. Nicolas of Bari." Eventually the nature of her transactions was discovered and she was cast into prison. It is said that she was strangled, but whatever her end, it is certain that she confessed, under torture, to instrumentality in six hundred murders by poison, including two Popes, Pius III and Clement IV.

Murrell says that the Aqua Tofana was made by rubbing white arsenic into pork, and collecting the liquid which drained from it during decomposition. To an irritant mineral poison was therefore added, by this vile process, a ptomaine or cadaveric alkaloid possessing properties of the highest degree of toxicity. Be this as it may, there is well-grounded belief that corrosive sublimate and opium were sometimes added to the arsenic.

In other countries there was similar activity in this line. Thierry, the historian of the Norman Conquest, for example, tells us of one queen of the Franks, Fridegonde, in the sixth century, whose life "could be summarized in a chronological table of assassinations by steel or poison"; and of another, Brunhilde, who poisoned her grandson and ten kings or sons of kings.

In Russia, Catherine I, wife of Peter the Great, noted for her scandalous misconduct, is believed to have poisoned her husband; and in France, Francis II and Charles IX were poisoned with the connivance of Catherine de Medici, wife of Henry II, who instigated the massacre of St. Bartholomew, to say nothing of the prompting of the assassination of Henry of Guise and his brother the cardinal. Catherine had in her employ a Milanese named Reni, who served her in the double capacity of perfumer and poisoner. Here, again, the backward swing of the iconoclastic pendulum has challenged the verdict of history, but historic judgment is still firm and impregnable. It is said that the attempted poisoning of Louis VI (Louis le Gros) by his stepmother, in pursuance of her inveterate hatred, was followed to the end of his life by an unnatural pallor. Hence arose the question whether the decoction used was obtained from an herb with properties similar to those alleged of the *Exsangue cuminum*, referred to by the Roman poet, Horace, in one of his Epistles (I. 19).

Of the German criminals of this class, none attracted more profound attention, with one exception, than the devil incarnate known as Nannette Schoenleben. What a travesty this name (beautiful life) is upon her atrocities. On her way to the scaffold she declared that it would have been better for herself as well as for society had she been detected in her first offense and tried and executed for it. "Then," she said, "several lives would have been spared; a vast amount of suffering would have been prevented; and I should not now have had so many crimes to answer for in leaving this world."

The exception noted was a parallel case in Bremen, that of Frau Gottfried. This woman aroused general sympathy by the loss, in the course of a few years, of two husbands, her father, mother, brother and several children, thirteen in all. Their departure was followed by that of members of a family in which she was installed as housekeeper. When she was finally detected in sprinkling grains of a white powder over some meat, the news fell like a thunderbolt upon the community. It was received with stubborn incredulity. Who could believe, said her acquaintances, that one so amiable, so kindly, so pious, so tender and devoted a nurse, so universally respected and esteemed, could be guilty of poisoning her own friends and relatives? She could not, they added, see any one in pain or misery without shedding tears; while the sufferers were writhing in the agonies of death, she called on God to pity them and release them from their anguish. When she was confronted with the evidence of her guilt, the bloodthirsty demon confessed to forty murders during her career, and wrote a history of her life, the details of which are extremely revolting, especially in relation to the murder of her innocent children.

In Spain, the woman who appears to have excited the widest degree of horror and amazement was Donna Maria Mendieta, of Madrid. In conjunction with her paramour, whose name, by the way, was Santiago San Juan, she murdered her husband. Discovery led to arrest and trial. She was one of the most beautiful women in Spain, and belonged to one of its most ancient and honored families. But the judges were inflexible, and both she and her lover were sentenced to death and executed.

In England the most noteworthy case in high life was that of the Countess of Somerset who poisoned Sir Thomas Overbury, in the Tower of London, in 1613, with corrosive sublimate. As Lady Essex, she had procured a divorce from her husband in order to marry Robert Carr, Earl of Somerset. Overbury was in possession of incriminating facts concerning Lady Essex which would have been fatal to her success, and he was put out of the way ten days before the decree of divorce was pronounced. More than two years elapsed before circumstances led to the discovery of her crime. She was found guilty, but was pardoned by James I. This leniency was in marked contrast with the treatment of those who had no friends at Court. A statute of Henry VIII ordered poisoners to be boiled to death, and in accordance therewith it is related that a young woman who had poisoned three families at Smithfield was boiled alive.

In the course of the latter half of the seventeenth century a mania for secret poisoning was developed in France which extended to all classes of society. La Spara and Tofana had fitting types and imitators in Paris in two midwives and fortune-tellers named Lavoison and Lavigoreux. So great was their traffic in poisons, and it may be said, so fashionable, that their houses were thronged with purchasers, both of high and low degree, from Paris and the provinces. The usual motives and incentives were in full play, jealousy, revenge, avarice, court intrigue, political enmity, and removal of all obstacles that stood in the way of iniquitous plans and projects. To suppress and punish this class of offenders, a special tribunal was established in the reign of Louis XIV, known as the "Chambre Ardente." Lavoison and her confederate were condemned and executed in 1680, and their accomplices in various cities of France, to the number of more than one hundred, were burned or beheaded.

Although various noxious solutions were employed by these monsters, the Aqua Tofana appears to have been the favorite. With reference to its results we need not confine ourselves to the annals of medical jurisprudence, for, as has been observed, poets, novelists, and historians have delighted to linger on this chapter of criminal lore, and to paint in vivid colors the tragic scenes which, in Italy, France, and Germany, were enacted by the miscreants who administered the fatal dose with murderous intent.

Of the poisoners of the aristocratic class at that period, none commanded such widespread interest, and none is so well remembered as Marie-Marguerite d'Aubray, la Marquise de Brinvilliers. Here was a woman with every advantage of high birth and position, of large wealth, of influential connections, of singular beauty, of fascinating manners and elegant accomplishments, recklessly throwing all away in the attempt to substitute a scoundrelly lover for a reprobate husband. This lover, Gaudin de Sainte-Croix, who while

incarcerated in the Bastille, in company with the Italian chemist Exili, had learned from him the preparation and application of poisons, so far as then known, became in turn the instructor of the marchioness. This Jezebel in order to test the efficacy of the materials which St. Croix supplied, and to qualify herself for the sure destruction of her father and her two brothers, who antagonized her shameful amour, visited the hospitals, particularly the Hotel Dieu, day after day, in the guise of a sister of charity, to experiment upon helpless invalids. In the course of this diabolical work she often produced effects as mere aggravated symptoms of the maladies she was ostensibly endeavoring to alleviate, and while outwardly gentle, tender, compassionate, and sympathetic, she succeeded in sending a large number to the dead-house without incurring suspicion. St. Croix afterwood lost his life by inhaling deadly fumes in his laboratory; letters compromising the marchioness were found in his cabinet, and she escaped to Liège, but was eventually decoyed from a convent in which she had taken refuge, and brought back to Paris, tortured into confession, and beheaded on the scaffold in the Place de Greve. The best narrative of her romantic career may be found in the admirable historical novel of Albert Smith, better known as an entertaining writer than as an English surgeon.

Coming down to our times, we find in the governing motive a largely diminished ratio of the instigation of the earlier days. Secret poisoning for the removal of people inconveniently in the way of the advancement of wicked ambition, both in domestic and public life, has been displaced to a great extent by the promptings of mercenary rapacity. Vengeance as a mainspring has been transformed into the pecuniary profit that accrues from the death of the victim. In the way of temptation to the flagrant exercise of the avaricious propensity, the life insurance system has innocently widened the range of moral hazard, both in this country and in Europe. But, as we too well know, every organization in the social economy is liable to abuse. How often is the beauty of holiness tarnished by the hypocrites who use the Church as a cloak; how often the holders of fiduciary trusts become defaulters; how frequently the incumbents of official position defraud the government. A system whose outcome proves it to be the best form of organized philanthropy yet devised, cannot be held responsible *per se* for such criminal perversion. That it should so unsex the daughters of Eve, and so metamorphose them into fiends, as the life and accident insurance companies too often have occasion to experience, is a matter for infinite regret.

A complete catalogue for the nineteenth century of the special class of cases under consideration in Europe and America, either under indictment, or subject to the suspicion that is allied to moral certainty, would occupy the entire time and space allotted to this paper. A few instances, taken from the experience of life-insurance companies, will serve the purpose of illustration. That which leads all others in the extent of atrocity is reported from Hodmezoe, Hungary. During the trial, a few months ago, of two Hungarian peasant women, named Jager and Csordas, startling disclosures were followed by confessions of murders numbering several hundred. Their operations were conducted on the plan of the speculative transactions in Pennsylvania and other States, commonly known as graveyard insurance, in which the lives of consumptives, hopeless invalids, paupers and octogenarians were made the subjects of gambling policies without their knowledge or consent, and were hastened to their end by violent measures. In such cases the principle of insurable interest is ignored, and medical certificates are forged. In the cold-blooded procedure of the Hodmezoe conspirators the companies involved were small local beneficial or burial societies, and the amounts at risk were little beyond ordinary funeral expenses. Hence, to make their traffic in human life remunerative, it had to be carried out on a large scale.

Next to this bad eminence or championship was a woman named Van der Linden, in Leyden, Holland. In the latter part of 1883 she was arrested on a charge of having destroyed sixteen lives, most of the victims being members of her own family, including five of her children. She had had their lives insured for her benefit, and received the amount of the policies after their deaths. She confessed her guilt, but her story was so incredible in the boundless wickedness it revealed, that most persons were inclined to reject it in its full extent, even on the assumption of homicidal mania.

In Liverpool, two sisters named Higgins and Flannagan were indicted in 1884 for the murder of four of their relatives, and on trial were convicted and punished. At Deptford, adjacent to Greenwich, Elizabeth Frost and her mother, Mrs. Winters, in 1889, disposed of three cases in similar fashion. Soon afterward Mrs. Winters died, whether purposely poisoned, or whether she committed suicide, is unknown, and, finding her end approaching, made full confession of her guilt. From her dying statement it appears that she preferably employed "white precipitate," but how or why an ignorant woman like her was led to select the ammonium-chloride—to which there is so little recourse—instead of the bichloride of mercury—which is so frequently resorted to—can only be left to conjecture.

With respect to social position, there is a wide gulf between these coarse and vulgar reprobates and such society leaders as the Belgian aristocrat, Madame Marie Therese Joniaux, whose trial at Antwerp, four years ago, for the murder of her sister, brother, and uncle, all insured in her favor, created a profound sensation. She was the daughter of General Ablay, a distinguished cavalry officer; had been brought up in an atmosphere of refinement and cultivated taste; had been twice married to men of superior rank, and had moved among the best social circles of Brussels and Antwerp. But down in the depths of her moral sense she proved to be as depraved, as vicious, as impenitent as the low-born wretches to whom we have referred. Her love of luxury and display and her passion for cards exhausted her fortune, and her nearest relatives were sacrificed to repair it. Yet she was so far above suspicion that it was only the rapidity with which the claims successively matured, and the impetuous and indecent haste with which payment was claimed, that led to her betrayal.

On this side of the Atlantic, the worst case, according to court records, though not the worst in point of fact, is that of Mrs. Sarah J. Robinson, of Somerville, Mass. In 1885, this stony-hearted woman deliberately destroyed the members of

her family, seven in number, one after another, but thanks to the interposition of criminal lawyers and the interference of morbid sentimentality, she has escaped the hangman's rope. In a similar way, another home-destroyer, Mrs. Lizzie Brennan, who killed her husband and two sons at Holyoke, in 1889, evaded justice. With one exception, it should be noted that the entire gang of female poisoners in this country have escaped capital punishment. While this result is usually due to the sympathetic acquittal or the short-sighted disagreement of the juries before whom such cases are tried, there are times when, as in the case of the infamous matricide, Frankie Morris, of Kansas, they are inflexible, and an obviously just and conclusive verdict is neutralized by the subsequent crafty juggling of cunning criminal lawyers. Twenty-five years ago Mrs. Victor, of Ohio, managed her own escape by singing herself with Ophelia-like plaintiveness into the safe shelter of an insane asylum, and thereby into commutation of the death sentence. But that trick cannot be successfully repeated at the present day. The exception noted, to the credit of a Philadelphia jury, was that of Mrs. Sarah Jane Whiteling, who was executed in Moyamensing prison, in 1889, for the murder, by arsenical poisoning of her husband, her daughter aged 9, and her son aged 3, to obtain the paltry amount of their industrial policies, a total of $399.

Aside from sociological considerations, our interest in these cases centers mainly in their relations to medical jurisprudence, medico-legal science, forensic medicine, and especially forensic toxicology, and the present attitude of expert evidence. Questions arise with which we have no concern, and which we leave to the ministers of the law; for instance, the recent dispute between the authorities of California and the authorities of Delaware as to which should hold for trial the woman Botkin, who is charged with the craftily planned death of Mrs. Dunning and Mrs. Dean, in Wilmington, by poisoned candy transmitted through the mails. That question having been settled, it is now time for the reinforcement of legal chemistry. One of the most perplexing contentions on the part of the defense which the prosecution is compelled to meet is the concordant responsiveness of ptomaines, the alkaloids of putrefaction, to the general reagents for such alkaloids as morphine, strychnine, coniine, atropine, veratrine, etc. In the Sonsogna trial at Cremona, Italy, and in the Lamson trial in London, it was contended that the alleged presence of morphine was mistakenly identified as that of ptomaines, the reaction being the same. The analysts, urged the defense, were not warranted in asserting the existence of a vegetable alkaloid in putrefying material from the affirmative results of the reactions alone. Baumert goes so far as to insist that "in one case the ptomaines in question not only gave various chemical reactions, including the identifying reactions of strychnine, but also possessed the tetanizing action of that alkaloid." In view of such behavior of the spontaneously generated toxic products of putrefaction toward the general reagents, it is not to be wondered at that in the case of Madame Joniaux, at Antwerp, her defenders fell back upon such a convenient theory in spite of the evidence that morphine was found in the intestines of her victims, and that she had repeatedly obtained morphine from Brussels chemists on forged prescriptions.

A case which attracted wide-spread attention was that of Madeline Smith, of Glasgow, who was tried in July, 1857, for the murder of her lover and seducer, Pierre Émile L'Angelier. He sought to crown his perfidious conduct with marriage, but her parents, not knowing of their illicit relations, forced an engagement to marry a man of their choice, Mr. Minnoch. Thereupon the revengeful scoundrel exposed to friends of the family Madeline's piteous letters to him with reference to her *enceinte* condition, and drove her to desperation. The indictment read, "administering arsenic or some other poison in coffee, cocoa, or some other food or drink, in February, 1857." The trial ended with the Scotch verdict, "not proven," to the great relief of the community, everybody being in sympathy with the defendant. In the course of the analytical evidence, several chemico-legal questions were involved, one of the most important of which related to the degree of solubility of arsenic. In the stomach of the deceased the chemists found ninety grains of arsenic either dissolved or suspended, and there was arsenic enough in the intestines to cause violent purging. This, by the way, was seized upon by the defense as consistent with the theory that the deceased died of cholera morbus. But while the crown contended that the arsenic had been administered in coffee or chocolate, the defense claimed that it was impossible that such a quantity could have been taken unconsciously by the deceased in these or any other liquid media. With reference to this view, Witthaus very properly notes that it presupposes that solution is a requisite to secret administration, but while this may be true of a transparent medium, and where the victim is in the possession of his senses, it must not be forgotten that a much larger quantity than could be dissolved may be stirred into a thick and opaque liquid, and taken without producing any effect upon the senses, except possibly a rough taste or gritty sensation. As to grittiness, it may be noted parenthetically, that such crystalline particles could hardly measure up to the standard of the crushed and powdered glass which, in October, a Battle Creek, Michigan, wife of 28 years commingled with the breakfast oatmeal for her husband, a capitalist of 80 years of age. It proved to be quite as potent as the destructives in more common use.

In the case of the American notoriety, Florence Elizabeth Maybrick, tried in Liverpool, in 1889, for the murder of her husband, James Maybrick, it appeared in evidence that the cause of death was gastro-enteritis, which, it was contended, had been induced by an irritant poison. On searching the house, eighty-five grains of arsenic were found. It was proved that James Maybrick was addicted to dosing himself with drugs, that arsenic in minute quantities was one of them, and that not long before his death he had purchased two and a half ounces of it. Even admitting the self-administration of fractional doses, arsenic is not cumulative in the ordinary sense of that term. In discussing the relation between absorption and elimination, it was shown that by the excretory action of the stomach none was left in that organ; that it was chiefly localized in the liver, and minutely disseminated in other organs. Death occurred on the eighth day after the

supposed administration of the arsenic, and this lengthened interval once more brought up the question of possible duration. While the usual period of fatal poisoning is not prolonged beyond twenty-nine hours, there are cases on record in which the end was delayed for twenty-four days. Though the trial, which lasted six days, was largely a battle of experts, it ended in conviction and sentence. As to the motive, the inherent probabilities point less to the amount of insurance on the husband's life than to improper intimacy with another man, and a desire to exchange Mr. Maybrick for Mr. Brierly.

In the Wharton case in this community, in 1871, there was a singular perversion of justice through the quibbling and subterfuge of the experts employed by the defense. It emphasized the conviction that ingenious sophistry may so confuse the judge on the bench, and so confound the jury in the box, that Justice will lend her weight to the wrong balance, and prosecution of guilt will be interpreted as persecution of innocence. Mrs. Eliza G. Wharton was tried at Annapolis on the charge of poisoning her old army friend, General W. S. Ketchum. Several physicians of acknowledged reputation and exalted character testified that Ketchum died from non-natural causes, in other words, from the administration of poison, and three well-known analytical chemists testified that tartar emetic was found in the stomach and viscera, and metallic antimony in the liver. On the other hand, the defense insisted that the death was due to a natural cause, that it was the result of disease, and that the disease was cerebro-spinal meningitis. The witnesses for the State showed that the symptoms and post-mortem appearances were consistent with the theory of poisoning by antimony, and showed, moreover, that the preceding history of the case and the absence of the characteristic lesions precluded the idea of death from cerebro-spinal meningitis. Their position was strengthened and corroborated by the simultaneous attempt to poison Mr. Eugene Van Ness, first with prussic acid, next with strychnia, and finally with tartrated antimony. In both cases the motive was based upon money considerations. The object of the experts for the defense seemed to be not so much to develop scientific truth as to criticise the witnesses for the State, to contend that their testimony was colored by prejudice, and, in one way or another, to impugn their motives. In thrusting forward their audacious assumption, their leader and chief spokesman was Dr. Edward Warren. In his magisterial way he declared that "the case of General Ketchum, from the first pain to the last convulsion, in all its phases, bearings and combinations, illustrates nothing more nor less than a typical example of that form of cerebro-spinal fever to which the name of fulminant has been so aptly given as indicating the suddenness of its invasion, the intensity of its phenomena, the rapidity of its march, and the fatality of its termination." Dr. Warren was supported in his position by several fellow-experts, but it was his own brilliant sophistry that led to disagreement of the jury and escape of the prisoner.

This is neither the time nor place to discuss diversity of opinion respecting questions in dispute in these cases. But a word in passing may be admissible with regard to the interested arguments of experts who are virtually employed and paid as counsel, especially in the line of defense. Common fairness and simple justice demand that both sides of the issue shall be clearly presented, but the Wharton case and similar cases go to show that the expert who has a client to serve, and accepts liberal payment for his services, may discredit this branch of medical practice by constructing a theory or framing an argument so plausible, so ingenious, so persuasive, as to mislead the jury, capture an acquittal, and distort the machinery of justice. The remedy lies in making the position a permanent one in the State, with judicial appointments from the ranks of demonstrated capability and scientific training. We should follow the example of Germany, where, we are told by Casper, "in criminal cases the experts first summoned are exclusively those whom the State, after prior examination of their competency and skill in such particular inquiries, has duly authorized to act for this purpose; while in addition to this, there is organized a tribunal of experts to which the opinions of expert witnesses can be referred." Some of our writers on medical jurisprudence have shown how a similar system can be grafted on our American practice. All that is needed to place our expert evidence upon a higher plane and to bestow upon it a larger measure of respect and confidence is appropriate and readily attainable legislation.

THE HISTORY OF THE MEDICAL DEPARTMENT OF TRANSYLVANIA UNIVERSITY AND ITS FACULTY.*

By William Jephtha Calvert, M. D.

The name Transylvania was first given to that tract of land included between the Ohio, Cumberland and Kentucky rivers. This territory was bought from the Cherokee Indians by Col. Richard Henderson and others for the purpose of establishing a separate and independent government under the sovereignty of Great Britain. The General Assembly of Virginia declared this purchase illegal, and Colonel Henderson was forced to be satisfied with a grant of land on the Ohio at the mouth of the Green River. On December 31, 1776, Kentuckee County, including all of the present State, was established by the General Assembly of Virginia, and three years later Col. Robert Patterson and others began the erection of a fort where Lexington now stands. The newly established county, separated from civilization by the mountains and overrun by a thieving and warlike tribe of Indians, offered to the youth

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no encouragement for education, refinement, or the study of the sciences.

By request, the General Assembly of Virginia, in May, 1780, to counteract these harmful influences, endowed the inhabitants of Kentuckee County with certain lands for educational purposes. This act, donating eight thousand acres of escheated lands to William Fleming and others, as trustees, was the first charter of the school to which, in 1783, was given the name of Transylvania Seminary, and sixteen years later that of Transylvania University. After ten years of religious and political rivalry the seminary was permanently located at Lexington, Ky., with Mr. Moore as its Master. The election of Mr. Toulmin to the Presidency, in 1794, was bitterly opposed by the Presbyterians, who subsequently founded the Kentuckee Academy at Pisgah. Dissatisfaction having already arisen in the new academy, the resignation of Mr. Toulmin from the Presidency of Transylvania Seminary, in 1796, brought about a friendly relationship between the two institutions, which resulted in their union. The new school was called the Transylvania University. The Legislature of Kentucky was afterwards petitioned for a new charter, which was granted December 22, 1798, to take effect January 1, 1799.

The founders proposed to make the new university complete in every branch. The Law and Medical Departments were immediately established, and the libraries and laboratories were equipped as rapidly as possible. The Rev. James Moore was the first Acting-President and Professor of Logic, Metaphysics, Moral Philosophy and Belles-lettres; Rev. James Blythe, Professor of Mathematics, Natural Philosophy and Astronomy; and Rev. Robert Stuart, Professor of Ancient Languages. The Law Department was formally established by the appointment of Mr. George Nicholas to the Chair of Law and Politics. The appointment of Dr. Samuel Brown to the Chair of Chemistry, Anatomy and Surgery; and Dr. Frederick Ridgely to the Chair of Materia Medica, Midwifery and the Practice of Physic, was the beginning of the Medical Department.

From the newspapers of this time we learn that the Medical Society met each week for the reading of original papers and the discussion of current topics.

Dr. Walter Warfield was, in 1801, appointed Professor of Midwifery, and in 1805 the Chair of the Theory and Practice of Medicine was occupied by Rev. James Fishback, M. D.

On account of the small number of students, and for other reasons not recorded, the faculty as a body resigned in 1806. An attempt to reorganize the faculty was made in 1809 when the following professors were appointed: To Anatomy and Surgery, Dr. B. W. Dudley; to Surgery and Obstetrics, Dr. Elisha Warfield; to the Institutes of Medicine, Dr. Joseph Buchanan, and to the Theory and Practice of Medicine, James Overton. Nothing was accomplished by this reorganization. A second attempt was made to reorganize the faculty in 1814, but all of the professors resigned before entering upon their duties. Dr. Dudley,* however, lectured to about fifteen students.

In 1816 a third attempt was made to reorganize the faculty. The following appointments were made: To the Chair of Theory and Practice of Medicine, Dr. James Overton; to Anatomy and Surgery, Dr. B. W. Dudley; to Chemistry, Dr. James Blythe, and to Obstetrics, Dr. W. H. Richardson. In December of the same year Dr. Drake was called as Professor of Materia Medica and Botany. In the fall of 1817 the Medical Faculty was fully organized as a department of the University, and a full course of lectures was delivered to about twenty students, at the end of which the degree of Doctor of Medicine was conferred, for the first time in the West, on John McCollough, of Lexington, Ky.

Dissatisfaction caused the resignation of Drs. Drake and Overton, in 1818, the former going to Cincinnati, Ohio, the latter to Nashville, Tenn. A controversy between Drs. Dudley and Drake, in regard to the resignation of the latter and some matters connected with a post-mortem, resulted in a challenge to mortal combat from Dudley to Drake. The latter declined, but his friend Richardson accepted the challenge. A duel resulted in which Richardson was seriously wounded in the groin, and from which he would have speedily bled to death had it not been for the ready skill of Dudley, who immediately checked the hemorrhage.

While the Medical Department was struggling against adverse circumstances, the Academical Department fared no better. The Trustees had, on several occasions, offered the

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* Benjamin W. Dudley (1785–1870) was born April 12, 1785, in Spottsylvania County, Virginia. In the following year his parents moved to Lexington, Kentucky. His early education was scanty, and of the languages he knew nothing. His medical studies were commenced under Dr. Frederick Ridgely, of Lexington, Ky, and in 1804 he attended lectures in the University of Pennsylvania. Here he met Mr. John Esten Cooke, Daniel Drake and William H. Richardson, all of whom were afterwards his colleagues in Transylvania Medical School. At the close of his second session, in 1806, he received the degree of Doctor of Medicine, and returned home to practice. While in practice he engaged in business, but to what extent is not known. In 1810, he decided to go abroad, where he could study medicine and surgery under the great teachers of his day. Sometime during the year he went to New Orleans on a flat-boat. Here he bought a cargo of flour, with which he sailed to Europe. He sold his flour at Gibraltar and Lisbon and went to Paris. During his four years' sojourn abroad, he spent most of his time in Paris and London, where he took advantage of the opportunities for studying anatomy and surgery. He was one of the leaders in the reorganization of the Transylvania Medical School and taught anatomy and surgery until 1844. From this date, until his retirement in 1850, he was Professor of the Principles and Practice of Surgery.

As an operator he was more cautious than bold, and believed that the preparation of the patient for an operation was essential to its success. He performed lithotomy about two hundred and twenty-five times and operated one hundred times before losing a patient. He operated on all but ten cases brought to him, and lost, in all, five cases. In his practice "a puke and purge, a purge and a puke, were used alike in tuberculous diseases, affections of the hip-joint, spine," etc.

His publications were few and of a practical nature. In his first article he asserted that epilepsy was often caused by pressure on the brain, and could often be relieved by trephining.

After he gave up teaching and practicing, in 1850, he passed the remainder of his life in retirement, and died on June 30, 1870, in his eighty-fifth year.

Presidency of the University to distinguished men; but each had declined the position. The Trustees seeing the bad condition of the University and having lost the confidence of the people, were convinced that political and religious contention must cease and a concerted action be inaugurated. As a result, Dr. Holly, of Boston, was, in 1817, elected President; which position he accepted on June 25th, 1818.

Dr. Holly was a man of unusual ability; his gentle and pleasing manners, his power as a teacher and a speaker, and his high moral character united with his untiring energy were in no small degree responsible for the subsequent success of the University. He entered upon his duties November 17th, 1818.

In the reorganization of the Medical School, Dr. Holly, although not a Doctor of Medicine, took an active part. Through his influence, combined with that of Drs. Dudley and Caldwell, the Medical School soon occupied a prominent position in the University.

Financial embarrassments were removed to some extent by the sale of the public lands donated by the General Assembly of Virginia and by the gifts of private citizens. The libraries were extended, the laboratories enlarged and better equipped, and more spacious lecture-rooms secured. A museum containing pathological specimens, models for anatomy, surgery and obstetrics, was established. Abundant material for anatomy and operative surgery was also supplied.

The following Chairs were represented in the faculty: Dr. Charles Caldwell,* Dean of the Faculty and Professor of the Institutes of Medicine; Dr. B. W. Dudley, Professor of Anatomy and Surgery; Dr. Samuel Brown, Professor of the Theory and Practice of Medicine; Dr. William H. Richardson, Professor of Obstetrics; Dr. James Blythe, Professor of Chemistry, and Constantine F. Rafinesque, Professor of Medical Botany.

In the reorganization of the Transylvania University, the following is the record of the first Faculty Meeting:

"*First Session*, 1819-20, *Nov. 8th*, 1819. The Faculty convened, present—Benjamin W. Dudley, Charles Caldwell, Samuel Brown, William H. Richardson and James Blythe.

"Charles Caldwell, M. D., was unanimously elected Dean, and requested to prepare and deliver, in behalf of the Faculty at the time of their induction into office, an inaugural address.

"Their request was complied with on the 18th of the same month and the address printed at the unanimous request of the Faculty and the Board of Trustees separately expressed.

"[Signed] C. Caldwell,
Dean M. F. T. U.

By W. H. Richardson."

Shortly afterwards we find in the records the following rules to govern the proceedings of the Faculty of Medicine:

"1. Any physician of reputation who shall have been engaged in the practice of his profession for the term of four years, then attended one entire course of lectures in this institution, shall be entitled to present himself as a candidate for the Degree of Doctor of Medicine.

"2. All candidates for said degree must, by the first day of February in every year, signify to the Dean of the Faculty, in writing, their intention to present themselves for examination, specifying at the same time the subject on which they propose to write.

"3. Each candidate, before receiving his diploma, shall satisfactorily sustain an examination before the Medical Faculty alone, and another in the presence of the Trustees and the President of the University. He shall, moreover, write and defend in public (in the chapel of the University or such other place as may be hereafter directed) a dissertation in the Latin, French or English language, pay to the librarian (of the Medical Faculty) the sum of five dollars and the cost of the diploma, which he shall receive. The fee for graduation shall be twenty-five dollars.

"4. Each candidate must be twenty-one years of age, and unless he shall, as above specified, have engaged in practice four years, must have attended two full courses of medical lectures, one of them at least in this University, and the other in some respectable chartered school of medicine, governed by the same laws in granting diplomas with this.

"Thesis must be not less than twelve nor more than forty pages, uniform paper, style and everything considered."

The first session opened with thirty-four students. In the spring of 1820 four students received their degrees, and honorary degrees were conferred upon three. The number of students rapidly increased, reaching in 1826 two hundred and eighty-one. This was the largest number recorded for one session. The number of graduates, however, increased until 1835, when eighty-three degrees were conferred. The total number of students enrolled in the Medical School during the forty years of its existence is four thousand three hundred and fifty-eight; the number of graduates one thousand eight hundred and thirty-three; and forty-four honorary degrees were conferred.

The library of Transylvania University was founded in

*Charles Caldwell (1772-1853) was born in Caswell county, N. C., in 1772. When fourteen he had mastered the Ancient Languages and in the following year took charge of the Snow Creek Seminary. In 1792 he entered the University of Pennsylvania, where he soon gained a reputation as a student. His translation of Blumenbach, in 1795, was the beginning of his literary career. In 1803 he instituted the first clinical lectures in the Philadelphia Alms House, now Blockly Hospital, and was appointed Professor of Geology and Natural History in the University of Pennsylvania, in 1816. In Philadelphia his eloquence gained for him great popularity both as a public speaker and as a teacher. Dr. Caldwell was called to Transylvania, in 1818, to occupy the Chair of the Institutes of Medicine and Materia Medica, and in 1837 he founded the University of Louisville, in which he taught until 1849, when the Board of Trustees asked for his resignation. Later he was occupied in establishing the University of Nashville, which soon became a rival of the University of Louisville.

He was much given to controversy, and his discussion with his teacher, Dr. Rush, shows his antagonistic character. While suffering from a high fever, he had been caught in a drenching rain, from which he expected to die; but to his great surprise he found that his fever soon left him. He immediately reported the fact to Dr. Rush. In his lectures Dr. Rush referred to the incident without giving Caldwell due credit. This aroused Caldwell's indignation to such an extent that he openly assailed Dr. Rush at the commencement exercises of the University of Pennsylvania. The mutual friendship which had previously existed, was now broken and Dr. Rush refused to sign Caldwell's diploma. Referring to the discussion, in his autobiography, Dr. Caldwell says, "Although victory perched on my brow, it cost me the Chair of Medicine in the University."

He was a great advocate of Phrenology and had the misfortune to outlive his favorite theme. "As a man, he was proud and egotistic; as a student, thorough and diligent; as a writer, clear, and as a physician, seldom consulted." He died in July, 1853, in his eighty-first year.

1784, by the Rev. John Todd, of Virginia. Soon after the establishment of the Medical Department, in 1799, five hundred dollars were appropriated for the further equipment of the library. After the reorganization of the Medical Department in 1818, the library was greatly enlarged and well provided with the standard books and journals of Europe and America.

In 1821, Dr. Caldwell was sent to Europe by the faculty to purchase new books and publications. For this purpose he took with him five thousand dollars appropriated by the Legislature of Kentucky, and six thousand dollars appropriated by the city of Lexington.

In the Transylvania Medical Journal for 1828, we find that the library contained three thousand volumes, comprising all of the rare and standard works of medicine and the associated branches of science, besides many publications of Europe and all of America.

After the reorganization of the faculty in 1837, Dr. Peter was sent to Europe to purchase books, apparatus, etc., and we find the following account rendered on March 25th, 1839: books and plates, six thousand dollars; chemical apparatus, two thousand five hundred dollars; preparations for anatomy and surgery, one thousand five hundred dollars; models for obstetrics, five hundred dollars; specimens for materia medica and therapeutics and drawing, five hundred dollars. A total of eleven thousand dollars.

The number of volumes at present in the library is five thousand six hundred and eighty-four; pamphlets and medical journals, seven hundred and fifty-four; bound volumes of theses, one hundred and thirty-eight.

The library is now owned by the Kentucky University located at Lexington, Kentucky.

In 1823, Dr. Daniel Drake,* of Cincinnati, was appointed to the Chair of Materia Medica and Medical Botany. On the resignation of Dr. Brown in 1825, Dr. Drake was transferred to the Chair of the Theory and Practice of Medicine, which position he resigned in 1827. Dr. Short was appointed to the vacant Chair of Materia Medica and Botany in 1825, and Dr. Cooke to that of the Theory and Practice of Medicine in 1827.

The following extract is taken from the minutes of a faculty meeting, on February 27th, 1826: "On motion it was resolved to examine six candidates daily, four in the forenoon, beginning at ten o'clock, and two at night, beginning at seven o'clock." All the Professors were present. Examinations were held on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday. An examination was held before the Board of Trustees, March 11th, 1826, beginning at nine o'clock, and concluding at noon. The commencement exercises were held at three o'clock of the same day.

The resignation of Dr. Holly, in 1826, which was brought about by religious contention and the publication of anonymous letters, was a heavy blow to the Academical Department of Transylvania. This department soon sank into insignificance and excepting a few successful sessions in the forties, was never restored to its former position. The Medical Department was now secure, and the subsequent reputation of Transylvania was largely due to this department.

The following are abstracts from the minutes of the faculty meetings:

"Regulations for the Dissecting Room.—The Demonstrator of Anatomy shall be chosen by the Faculty and shall furnish all the material, keep order, clean the room, preserve morbid growths and keep the dissecting room open from six to ten P. M."

"Whereas it has come to the knowledge of the Faculty that John Mason Marble of Tenn., a graduate of the last Medical Commencement, did copy the thesis of a former graduate and present it as his own production, which was received as such by the Faculty, therefore, be it resolved, that the said J. M. Marble be requested to attend another full course of lectures at the coming session and present another thesis of his own composition to the examination of the Faculty, and that the Dean be instructed to transmit a copy of this resolution with the determination of the Faculty in case it is not complied with, to the said Marble."

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* Daniel Drake (1785-1852) was born at Plainfield, Essex county, New Jersey, October 20th, 1785. His only inheritance was industry, temperance and piety. In early life he attended school during the winter months, generally from November to March, and the remaining part of the year worked on his father's farm.

Young Drake in his sixteenth year was sent to Cincinnati to study medicine under Dr. Goforth. He was to study medicine four years and Latin two quarters. His first duties under Dr. Goforth were to read Quincy's Dispensatory and grind quicksilver into mercurial ointment; the latter of which he found, from previous practice on a Kentucky hand-mill, much the easier of the two. At the close of his studies, he formed a partnership with his preceptor; and in 1805 attended his first course of lectures in the University of Pennsylvania.

In 1815 he attended his second course of lectures in the University of Pennsylvania and was graduated in the following spring, receiving many compliments from the faculty.

He returned to Cincinnati in 1816, and immediately acquired a profitable practice. During the year he was called to the Chair of Materia Medica in the Transylvania Medical School; and in the following year returned to Cincinnati to resume his practice.

In 1819 he founded, at Cincinnati, the Medical College of Ohio, in which he was Professor of Medicine. In the following year he was expelled from the faculty, he himself being the presiding officer on the occasion of his expulsion.

He again occupied the Chair of Materia Medica in the Transylvania University in the autumn of 1823; and in 1825 was transferred to the Chair of Medicine, which position he held for two years. In 1830, he was called to the Chair of Medicine in Jefferson College, of Philadelphia, where his eloquence and winning and attractive manners soon gained for him great popularity.

The Medical Department of the Cincinnati College was organized by him in 1835. He became Professor of Medicine, and Dr. S. D. Gross Professor of Pathological Anatomy. He was called to the Chair of Clinical Medicine and Pathological Anatomy in the University of Louisville in 1840, and in 1844 was transferred to the Chair of Medicine, which position he resigned in 1849. During the following year he was Professor of Medicine in the Medical College of Ohio; and in 1850 he was again called to Louisville. Two years later he returned to the Medical College of Ohio, but near the beginning of the session, on November 6th, 1852, death ended his varied and useful career.

As a writer he was interesting, clear and forceful; and was for many years editor of the Western Journal of Medicine and Surgery. During the later years of his life, he wrote a most interesting volume on "The Principal Diseases of the Interior Valley of North America," which was largely the result of his own observations and experience.

Dr. Blythe, in 1830, resigned the Chair of Chemistry and Dr. Lunsford P. Yandell was in the following year appointed to fill the vacancy, with Mr. H. Hubert Eaton, A. M., as his assistant.

In 1835 a summer school was established on the same basis as the winter session. Nine students were enrolled the first year, and sixteen was the largest number during any one year. The summer school was discontinued in 1840 and again reorganized in 1845.

Previous to 1837, the faculty had, on several occasions, discussed the advisability of moving the Medical Department of Transylvania to a larger city. The feelings of the several members of the faculty were not generally known until 1837, when Dr. Caldwell received an invitation from Hon. James Guthrie, of Louisville, Ky., to establish a Medical School in that city. It was first proposed to move the Medical Department of Transylvania to Louisville, but the proposition was soon given up on account of the manifest indignation of the citizens of Lexington and of some members of the faculty. The invitation was accepted by Dr. Caldwell and through his influence Drs. Short, Yandell and Cooke moved to Louisville.

The Faculty of the Medical Department of Transylvania was at once reorganized and consisted of the following members: Dr. B. W. Dudley, Professor of Anatomy and Surgery; Dr. J. M. Bush, Adjunct Professor of Anatomy and Surgery; Dr. James C. Cross, Professor of the Institutes of Medicine and Medical Jurisprudence; Dr. John Eberle, Professor of the Theory and Practice of Medicine; Dr. William H. Richardson, Professor of Obstetrics and the Diseases of Women; Dr. Thomas D. Mitchell, Professor of Materia Medica and Therapeutics, and Dr. Robert Peter, Professor of Chemistry and Pharmacy.

Public interest was awakened and an effort was made to increase the endowment of the Medical Department. In 1838–39, the city of Lexington donated seventy thousand dollars, and a private subscription amounting to thirty-five thousand dollars was given to the Department. The subscription from the professors materially aided in the erection of the new medical hall on the northwest corner of Broadway and Second Streets. The laboratories, libraries and museum were better equipped and the means of instruction greatly improved. The new medical hall was very complete and convenient.

The Chair of the Theory and Practice of Medicine which had been made vacant in 1838 by the death of Dr. Eberle was filled by the election of Dr. Nathan R. Smith,* of Baltimore.

*Nathan R. Smith (1797–1877) was born at Cornish, N. H., May 21st, 1797. At the age of twenty he graduated from Yale, and during the following eighteen months was a tutor in the house of Thomas Turner, of Virginia. At the expiration of this time he returned North and graduated from the Yale Medical School in 1823, taking for his thesis "The Pathological Relations of the Blood."

The following year he began the practice of medicine, in Birmingham, Vermont, and in 1825 was appointed Professor of Surgery and Anatomy in the University of Vermont.

In 1825–26 Dr. Smith visited Philadelphia, where he met Dr. McClellan and others, who were at that time organizing the Jefferson Medical School. Dr. McClellan was favorably impressed with Dr. Smith's professional knowledge and invited him to join their project and occupy the Chair of Anatomy. According to request, Dr. Smith accepted, holding his position two years.

In 1827 he was called to the Chair of Anatomy in the University of Maryland, and in 1829 was transferred to the Chair of Surgery.

On invitation from the Medical Faculty of Transylvania University, Dr. Smith in 1838, accepted the Chair of the Theory and Practice of Medicine made vacant by the death of Dr. Eberle. He held this position three years, when the following letter of resignation was sent to the Dean of the Faculty:

January 7th, 1841.

To R. Peter, Dean of the Medical Faculty of Transylvania University,

My Dear Sir:—It is obviously due to the Faculty of the Medical Department of Transylvania University, whom I have the honor to address through you, that any decision which I may have made in regard to further connection with that department should be announced as soon as made.

I regret to state that circumstances of an imperative nature, and some of them not anticipated, will compel me to resign my chair at the end of the present session. These circumstances are chiefly of a pecuniary character, and cannot but exercise a coercive influence upon one surrounded, as I am, by a young and numerous family, and with my mother's family, at New Haven, consisting of several members, entirely dependent on my exertions.

An unexpected claim, resulting from the delinquency of former Trustees of the University of Maryland, amounting to three thousand dollars, is urged against me. I have no feasible mode of release but by connection with the University of Maryland. It is unnecessary that I should explain particulars.

My residence in Lexington during three winters has satisfied me that practice, having any comparison with that which I enjoy in Baltimore, is not by any one to be hastily obtained here, preoccupied as the field is and limited in extent. The emoluments of my chair, deducting the current expenses of the institution, loss on uncurrent money, etc., would by no means be adequate to my wants, and to continue my connection otherwise than on equal terms with my associates, I should neither desire nor consent to. Indeed, it has been a source of pain to me that circumstances have compelled me to accept thus far the extra considerations named in our contract and always so punctually tendered by you.

Permit me to say that I should not originally have accepted the Chair of Practice on any terms, had there not been some possibility that I should become a permanent occupant of it. I am left, however, free to decide at this time and I am now influenced in my decision chiefly by contingencies which I could not have foreseen.

I assure the Faculty that I am fully sensible that our contract has been an unprofitable one on either part, but I trust they will do me the justice to bear in mind that both last year and the year before, I signified in a letter to one of their body, my willingness to withdraw at any moment that they might be able to make more permanent and satisfactory arrangements.

It will be seen that the circumstances which determine my resignation do not at all involve my personal relations nor my confidence in the stability and future prosperity of the institution. Never have I been connected with an association with whom (*sic*) it could be more agreeable to co-operate. To every member of the Faculty I am incalculably indebted for the flattering estimate which placed me in the chair, and has maintained me in it. The necessity which dissolves my connection with this body will be remembered as one of the most painful of my life, whilst the agreeable intercourse which I have enjoyed with its members and the honor of having occupied a Chair in Transylvania will ever be remembered with the most gratifying associations.

By the influence of the reputation and efficient exertions of the present Faculty and by the munificence of the citizens of Lexington, the Medical Department of Transylvania is now placed upon a foundation which renders its position perfectly secure. Its friends may, without fear of contradiction, pronounce it to be decidedly the best endowed Medical School in America. Its patronage and the emoluments of its Chairs are second to those of but one, and there are none, to be associated with which, I should consider it a higher honor.

Under these circumstances my resignation cannot exercise the least injurious influence upon its prosperity. The chair will immediately command the service of some one whose labors will be more efficient than mine.

You will please, dear Sir, convey to the members of the Faculty assurance of my great respect and affectionate consideration. Yours most truly,

N. R. Smith.

Letter to Dr. Smith from the Faculty.

Dear Sir:—The receipt of your communication informing us that circumstances beyond your control would oblige you to resign the Chair of the Theory and Practice of Medicine in the Medical Department of Transylvania University at the end of the present session, renders some expression of sentiment on our part both just and appropriate.

Permit us, therefore, to assure you that we receive the information of your intended resignation with regret and that nothing would have afforded us more gratification than the certainty of your continuance among us as a fellow-citizen and colleague.

The intercourse which has existed between us for three years during which

Dr. Elisha Bartlett* was elected to fill the Chair of the Theory and Practice of Medicine vacated by the resignation of Dr. Smith. This position he held until 1844, when he also resigned.

The attendance at the Medical School was gradually diminishing, so another attempt was made to place the Medical Department on a better footing. In 1844 the faculty was fully reorganized and the schedule revised. The following subjects were included in the schedule: Materia Medica and Therapeutics, Obstetrics, Chemistry, Anatomy, Surgery, General and Pathological Anatomy and the Theory and Practice of Medicine.

Dr. Lawson, of Cincinnati, Ohio, was called to the Chair of General and Pathological Anatomy and Physiology. Dr. Dudley occupied the Chair of the Principles and Practice of Surgery, and Dr. Bush that of Special and Surgical Anatomy. Four thousand circulars announcing the new reorganization were ordered at Cincinnati.

Dr. L. G. Wilson, of North Carolina, was chosen to fill the chair vacated by Dr. Bartlett.

In 1846 the faculty called for the resignation of Dr. Wilson and the chair was offered to Dr. Bartlett. The death of Dr. Richardson, in 1846, made vacant the Chair of Obstetrics, which was afterwards occupied by Dr. Annan. In 1849, Dr. Annan was transferred to the Chair of the Theory and Practice of Medicine, and Dr. W. M. Bolling, of Montgomery, Ala., was appointed to the Chair of Obstetrics. In 1847 Dr. E. L. Dudley was elected to the chair previously held by Dr. Lawson, and in 1848 Dr. H. M. Skillman was appointed Demonstrator of Anatomy.

The records of the subsequent history of the Medical Department have been either lost or destroyed, excepting the matriculation book, which shows that the number of students gradually decreased from year to year until 1858, when twenty-three students were enrolled. This was the last session.

During the Civil War the Medical Hall was used by the Union forces as a hospital and stable. It was later destroyed by fire. The libraries and apparatus were removed to Morrison Chapel which now belongs to the Kentucky University.

we have been associated, has been of the most harmonious and pleasant character, and the ability with which you have performed the duties of your Chair increase the reluctance with which we give up the expectations of a longer co-operation with you under the auspices of the Transylvania University.

With the most sincere wishes for your continued increase in fame and prosperity, we remain your friends and colleagues,

THE MEDICAL FACULTY OF TRANSYLVANIA UNIVERSITY,
ROBERT PETER, Dean.

On returning to Baltimore Dr. Smith occupied the Chair of Surgery, in the University of Maryland, until 1870, when he retired.

As a surgeon, he was famous; as a citizen, philanthropic and beloved.

His chief works were: "The Surgical Anatomy of the Arteries;" "Fractures of the Lower Extremity." He invented an anterior splint to be used in fractures of the lower extremity, and a lithotome.

His death occurred July 3, 1877.

* Elisha Bartlett (1804-1855), was born at Smithfield, Rhode Island, October 6, 1804. His early education was received from the best seminaries in the places where he occasionally resided. His professional education was of the same varied nature. Having studied at Uxbridge, Worcester, Burton, Providence, he received his degree from Brown University in 1826. "His varied education made him familiar with, and attractive in, all social circles, easy and graceful in his manners, and universally popular."

After graduating he repaired to Paris for the further study of medicine. Leaving Paris after a year's profitable study, he journeyed into Italy before returning to America.

His first residence in America, as a physician, was at Lowell, Mass., where he soon enjoyed a lucrative practice. He married in Lowell in 1827, and in 1828 accepted the Chair of Anatomy in the recently established school at Woodstock, Vermont.

He was appointed Professor of Pathological Anatomy in the Berkshire Institute at Pittsfield, Massachusetts, in 1832, and in 1844 the University of Maryland offered to him the Chair of the Theory and Practice of Medicine. In 1850 he occupied the Chair of the Institutes of Medicine in the University of the City of New York, and on the death of Dr. Beck was called, in 185', as Professor of Materia Medica and Medical Jurisprudence, to the College of Physicians and Surgeons of New York. Owing to his failing health he soon gave up his professorship and retired to Smithfield, Rhode Island, where he died in 1855.

He was, in 1836, chosen the first mayor of Lowell, and, in 1840, was sent as representative to the Legislature of the State of Massachusetts. As a writer, he was clear and interesting; as a speaker, eloquent and attractive.

SKETCH OF JOHN CRAWFORD, M. D.*

BY E. F. CORDELL, M. D.

(*Read before the Johns Hopkins Historical Club, May*, 1899.)

Although now quite forgotten by the profession of this city and State, there is no name in all its annals more honorable or worthy of perpetuation than that of Dr. John Crawford, of Baltimore. His life, character and writings afford abundant material for a biographical sketch of the deepest interest. He was the second son of a clergyman in the north of Ireland, where he was born May 3, 1746. His family was highly respectable but poor. His father was a scholar, a man of talent and piety, who raised his children in the love and fear of God. The seeds thus sown brought forth a rich harvest of virtues in the son, the subject of this memoir. His brother, Adair, achieved eminence in England and is spoken of as "one of the most

* Dr. Quinan, *Med. Annals, sub voce*, has placed a "Rev." after Dr. Crawford's name. The deep religious fervor of the latter, so unusual in a medical writer, may have suggested the idea that he was a clergyman; or, Dr. Quinan may have confounded with him a "Rev. John Crawford," who resided in Baltimore at one time and some of whose writings are extant. There is no justification for the clerical title.

brilliant ornaments of medicine and philosophy" in that country.† John was reared among his family until the age of 17, when he was sent to Trinity College, Dublin, to pursue classical studies. Thence he went to the University of Leyden, which was then in high repute, owing chiefly to the great fame of Boerhaave, and there he received the degree of Doctor of Medicine. He then made two voyages to the East Indies as surgeon in the East India Company's service, receiving on his return the thanks of the Company and a considerable sum of money for his zeal and fidelity. During these voyages he kept a diary, from which very interesting extracts were published in the Edinburgh "*Annals of Medicine.*" About the year 1778 he was married, and shortly after received the appointment of Physician-in-Chief to the Hospital in the Island of Barbadoes. This was a position of great honor, and it might also, in other hands, have proven an avenue to great wealth, for Dr. Crawford had under his control large contracts for supplying the British fleets on the West India station. But with that magnanimity and self-neglect which so often characterize men of lofty character and purpose, he cared but little for wealth and allowed opportunities for acquiring fortune to go, without even a share of their profits, to others. In the year 1780 the island was devastated by a terrible hurricane, and this afforded occasion for the exhibition of his generous and humane disposition. Amidst general ruin his property alone remained intact, and not a single medicine was left upon the island except what was in his possession. He refused to profit by the common distress, but supplied medicines and other aid to those who needed them without stint and without compensation. In 1782 bad health compelled him to return to England. During this voyage his wife died under very distressing circumstances, leaving to him the care of two infant children. Having recovered his health he returned to Barbadoes, but soon after removed to Demerara, where he had been appointed Surgeon-Major to that colony then in the possession of the Dutch. During his residence at Demerara the authorities conferred high honors on him, and he had frequent opportunities for the exhibition of that philanthropy which was his peculiar attribute. His house, his table and his purse were open at all times and to all. Strangers especially profited by his open-handed hospitality. But he did not neglect professional duties and interests. The military hospital with 60 to 80 beds, and absolutely under his control, afforded a wide field for observation and study, and he made a large number of autopsies. An observation which he made at this time was the frequency with which he found abscess in the liver where there had been no symptoms pointing to its existence during life. About the end of 1794 his health again gave way under the influence of bad climate, and he was obliged to return to England. Thence he went over to Holland to settle business affairs with the Dutch government. During his stay in Holland most of his time was spent at Leyden in study and research. Meanwhile Demerara was transferred to the control of the English. Although he was offered by the English government the same position which he had recently held in the colony, in the interest of his children whom he desired to be well educated, and by the solicitations of a brother-in-law who had already crossed the water, he was induced to decline the offer and embark for the United States. He arrived in Baltimore in 1796, the year the city charter was granted, and about the same time Drs. Davidge and Potter settled here. Thenceforth, for seventeen years, Baltimore was the scene of his mature life-work. A man of such a character and acquirements could not long remain obscure in any community. "The unaffected urbanity of his address and manners," says his biographer, "the sweet benevolence of soul, the innate dignity of mind which shone with such animated luster in every lineament of his noble, manly countenance, soon gained him the acquaintance and esteem of all whose respect is valuable of every class of his fellow citizens." A professional career would furnish such a generous nature many opportunities for the exhibition of a humane and unselfish conduct, but such acts form but the ordinary routine of a good physician's life and their existence is only known by their being the necessary accompaniments of such a life. Of Dr. Crawford's public acts we know more. He was a participator, if not a leader, in most of the humanitarian enterprises of his day. The Baltimore General Dispensary, established in 1801, owes its origin directly to him, and he continued an active manager of it until his death. He was also connected with the Hibernian Benevolent Society from the earliest period of its existence and held several offices in it. To his indefatigable exertions, perhaps, more than to those of any other individual, is the State indebted for the establishment of the Penitentiary. He was one of the founders of the Bible Society of Baltimore, an association of Christians of every denomination, designed to promote the spread of the gospel among all men.* He was also one of the directors of the "Baltimore Library," the first institution of the sort in the city. There is extant a lecture delivered by him at the Medical College, in November, 1811; it is entitled, "*Introductory to a Course of Lectures on the Cause, Seat and Cure of Diseases,*" 8vo., pp. 51. In November, 1812, he began another course on Natural History, on Hanover street, continued later on Commerce street. This course was also under the auspices of the college, and was to have been given at the college on Lombard street, but the building was not sufficiently advanced at the time for occupation. The title of the chair which he held from the Regents of the college was "Lecturer on Natural History." He was soon compelled to abandon this course, but the reasons for its discontinuance are not given. Of the lectures which he gave his biographer says: "His compositions were remarkable for

† I find the following notice of Dr. Adair Crawford, in the *Cyclopædia of Biography*, by Parke Godwin, N. Y., 1880: "Physician and Naturalist. Physician to St. Thomas' Hospital and Professor of Chemistry at Woolwich. Author of several chemical works." In his lecture on "The Cause, Seat and Cure of Disease," Dr. John Crawford refers to his brother as "my revered brother . . . who was the first to ascertain by actual experiment that animal heat was derived from the air in respiration, and thus brought to a conclusion the conflicting opinions on that intricate subject."

* He was a director of the "Maryland Society for Promoting Useful Knowledge," founded in 1800.

correct and elegant style, and . . . displayed a soundness of erudition and a depth of research seldom equaled." Dr. Crawford's professional standing and enterprise are also shown by the part he took in the introduction of vaccination in this country. He received a supply of virus from Dr. Ring of London, in the summer of 1800, and was successful in its use.* This was contemporaneous with its use in Cambridge, Massachusetts, by Dr. Waterhouse, to whom the credit is usually given of having been the first to employ it in America.

With such sentiments and such a desire to be useful to his fellow-men, it is not surprising that he drifted into an organization which holds charity to be a supreme virtue and duty. He became connected with the Masonic Order here in 1798. In this he had a wider field for the exercise of that benevolence which was a part and a very necessity of his nature. He rose at once to the highest office in his Lodge and was recognized as a leader among his brethren in the State. In 1801 he became Grand Master, having already presided at most of the meetings of the Grand Lodge during the previous two years. After this he was continuously and unanimously elected to the same office, with the exception of one year when his professional engagements compelled him to decline, to the period of his death in 1813. The charges which he delivered to his brethren in the Grand Lodge have been preserved and they are models of style and of Christian fervor. So highly esteemed were they by the fraternity that in order to diffuse their beneficial influence more widely they were in some instances published and distributed among the order in other States. His numerous Masonic writings, including a work upon Masonry, which he had prepared for publication, were bequeathed by his will to his "beloved friend Nicholas Le Favre, Esq., of Philadelphia, Gentleman." He also wrote many medical articles which are highly interesting and valuable. He was a large contributor to the "Medical and Physical Recorder," 1808–9, edited by Dr. Tobias Watkins, the first medical journal published in Maryland. His medical writings were bequeathed to Dr. William Donaldson, of Baltimore, and have probably been destroyed. Although—and it seems strange—Dr. Crawford did not enjoy the honor of being an incorporator or founder of the Medical and Chirurgical Faculty of Maryland, he held high rank in its early councils, being censor, examiner, orator, and member of the committee appointed to publish its transactions. He was also Chairman of "The Medical Faculty of Baltimore" and as such made a report on the health of the city to the City Council, February 10, 1800. He was Vice-president of the Medical Society of Baltimore and Consulting Physician to the Board of Health and City Hospital. Doctor Crawford died at his residence, corner of Hanover and German Streets, on the morning of the 9th of May, 1813. Of the nature of his illness we are not informed, but it was brief and violent in character. The Grand Lodge was then in session. He attended the meeting on May 4, and delivered an annual address as usual. It is said to have been able and excellent—"the production of his rich imagination, couched in the most affectionate and parental language." At its conclusion he intimated to his brethren his wish to retire from office and pleaded in excuse for not serving longer his already lengthy services and advanced age. He then withdrew, giving the Tyler an affectionate shake of the hand as he passed through the adjoining room, and remarking that the door which had just closed upon him would never again be opened for his reception. Hardly had he left the lodge room before the members, by spontaneous act, gave him a unanimous vote of continuance. His presentiment came true. Owing to the apprehension consequent upon the approach of the British, the Grand Lodge did not meet again until the 9th of the month. Meanwhile, on the very next day after his attendance, he was attacked with the fatal illness which terminated his life in less than four days. On the 10th of May the Grand Lodge was convened and followed his remains in sad procession to the Presbyterian graveyard, corner Fayette and Greene Streets, where they were duly interred. In the following June a monument of sandstone and marble, carved with masonic emblems and containing an inscription conveying the chief facts here stated, was erected in his honor.

Dr. Crawford left one child, a daughter, who married Mr. Maximilian Godefroy, an architect and the designer of many of the public buildings of this city. It is not known whether she had any children. Dr. Crawford's library was purchased from his widow by the Regents of the University of Maryland and formed the nucleus of the library of that institution now known, from the larger bequest of another physician, as the "Brune Collection."

The character of Dr. Crawford seems to have excited the admiration and reverence of every one who came in contact with him. His urbanity, his unselfishness, his tireless charity, his forgetfulness of injury, his genuine human sympathy, his earnest Christian piety and his social virtues, made him a model for imitation. His scientific and professional attainments and position were conspicuous and freely acknowledged. His time, his labors, his cares and his fortune were devoted to the cause of suffering humanity. One writer says of him: "Since the days of the celebrated Howard that man has not appeared on the stage of life whose character so nearly resembled that celebrated philanthropist as Dr. Crawford." Many remarked his strong resemblance in face and form to Washington. Nor did this resemblance, which appears in his picture, stop at the exterior; there was also a close identity of sentiment, motive and character. There can be little doubt that upon a larger field of action, Dr. Crawford would have proven with equal certainty that he possessed the same elements of greatness; for greatness is not insured by the mere possession of certain qualities of mind and heart but requires an opportunity also for its exhibition.

Dr. Quinan (Medical Annals of Baltimore. 8vo. Baltimore, 1884) gives the following list of writings of Dr. Crawford:

Thesis (title unknown); Journal of a Voyage to Bombay and Bengal as Surgeon in the Employ of the East India Company, 1772; Observations on Native Camphor, Medical Communications. Edinburgh. Vol. 8, p. 253, 1793; On a Disease of the Liver hitherto little known. London. 8vo., 1776 (?); Report,

* *Ring on Cox-pox*, 1801, p. 496. (quoted by Quinan).

as Chairman of Medical Faculty of Baltimore, to City Council on Health of the City, February 10, 1800; Address at Grand Convention of Free Masons of the State of Maryland. Dobbin & Co., Baltimore, 1802. 8vo., pp. 48; On the Sanicula. Baltimore Medical and Physical Recorder, Vol. 1, 1809; Hepatic Cases, Same, 1809; Case of Ascites, Same, 1809; On Seats and Causes of Disease, Same, 1809; A Lecture Introductory to a Course of Lectures on the Causes and Seats of Disease, etc. E. J. Coale, Baltimore, 1811. 12mo., pp. 51; Four Letters on the Treatment of Yellow Fever. Federal Gazette, September, 1802. To these I would add: Remarks on Quarantines. Baltimore Observer, Vols. 1 and 2, 1806–7. Dr. Crawford also delivered one of the Biennial Orations before the Medical and Chirurgical Faculty in 1805, but I am not aware that it was published.

Of the above I have had access to the Masonic Addresses, the lecture on the Seat, Cause and Cure of Disease, and the Remarks on Quarantines. Several others can be seen in the "Medical and Physical Recorder," 1808–9, edited by Dr. Tobias Watkins, a copy of which is preserved in the Surgeon-General's Library in Washington. I may say, in passing, that some of the purely literary articles in the Baltimore Observer are doubtless by his pen, and I have a strong suspicion that the lady editor of that periodical was his own daughter.

I direct your attention now to Dr. Crawford's writings as they have come under my notice.

A strongly religious tone pervades his works; it has a genuine ring and is altogether free from cant: "There is one course I shall pursue," he says, "which has been strangely neglected by medical writers—never to lose sight of the Creator."* Speaking of the infidelity prevalent among the "Faculty," he says that professional study, being directed to the physical causes and operations of the animal economy, tends to a neglect or undue appreciation of the spiritual side of life. Hence, physicians are disposed to attribute to secondary causes things which can only belong to first; and so, resting there, they lose sight of a Divine cause. It cannot be that true religion and true philosophy are ever at variance with each other; on the contrary, when rightly understood they mutually and powerfully support each other. Who but the Deity, he asks, could operate the wonders that are continually pressing upon our regards? Attributed to a divine source, wonder is changed into admiration, reverence and devotion! Philosophy can never be brought to perfection unless the mind of the investigator is suitably impressed with the necessity of having his thoughts continually directed to the stupendous Author of all things. It cannot be too frequently or too strongly urged that our success will be precisely in proportion to our discovery of the designs of Him by whom the objects of our inquiry were contrived and executed.

Passing on to the more strictly medical writings—I refer particularly to those on Quarantine and on "The Cause, Seat and Cure of Disease"—in these he discusses principally the origin of disease, and it is his views upon this subject that especially rivet our attention and constitute, as I think, his title to fame. The lecture on "The Cause, Seat and Cure of Disease," besides outlining the course which he proposes giving,† deals almost exclusively with the first of the three subjects named and in the more general way of an introductory lecture. It is in the article, or series of articles, on Quarantine that he enters into the details of the subject and produces his facts. I regret to say that the volume containing the latter was not known to me until two days ago and I have had opportunity for only the most cursory examination of it. The volume in which it is contained (Baltimore Observer, a weekly literary publication, commencing November 29, 1806 and continuing until the end of 1807) of which there seems to be in all our libraries but one copy, is the property of the Maryland Historical Society, and the rules of that body do not allow it to be taken out. It is not catalogued and we only knew casually of its existence. Therefore, I am not able to give such a careful analytical review of it as I would wish. I learn, however, that Dr. Crawford first began to entertain the idea of an animated principle, a contagium vivum, as the cause of disease, about 1790, when he went to reside in Demerara, or Guiana. He saw there, of course, a large number of cases of malarial and yellow fever. At the close of the day when the beams of the sun fell aslant upon the earth he saw myriads of minute insects—at other times invisible—fluttering in the air. He said to himself, "if in the air why not in my air tubes? and why not thus the conveyors of disease?"

All analogy taught that disease and decay were coincident with the presence of minute organisms. Such was the case with the putrefying flesh exposed to the air, such with the decaying fruit, such with the rotting wood, such with the moth-eaten garment, the rusted grain. If the fly lays its eggs to develop later into the crawling worm, why may not minute insects deposit their offspring in our bodies, there to develop and ravage the tissues? And he declared that this was a law of universal application, not more applicable to the lower animals than to man, and embracing the vegetable kingdom as well as the animal.‡ With these views he returns to Leyden; and

* Cause, Seat and Cure of Diseases.

† "I shall first submit to your consideration a succinct account of the diseases of the human body, the causes of which have been made evident to the senses. . . . I shall then proceed to consider the cause of suffering in the animals that are in nearest connection with us, continue my inquiries through all the animal tribes down to the smallest insect as far as the means of information have been within my reach, and finally advert to the leading sources of destruction in the vegetable kingdom. I shall then revert to man, and hope to reflect the light elicited from them on what is obscure in our own species, etc."

‡ "There is a principle which pervades the whole circle of nature of which we should never lose sight; it is that every individual existing is more or less a type of every other, although no two things whatsoever are exactly alike." Balt. Observer, II, 3, July 18, 1807.

Again: (These animalculæ) "do not spare *even ourselves*. They have been traced through all their various operations and changes on every occasion except the last" (*i. e.*, in man). "Here our progress has been arrested, here our efforts have been palsied. There is not yet an individual, whether naturalist or physician, who has traced diseases to this source or viewed them as constituting a part of the general law of nature. We have seen that in Gaubius, in Boerhaave, and much more in Linnæus and his followers, there are

there, while reviewing some Dutch troops just back from a campaign in the marshes, he enunciates it to Professor Brugmans, Professor of Natural History and Botany in the University, and another physician who was present. He learns from them to his surprise that such views were not new. Yet there was no mention of them in any of the works on medicine of the day. He mentions a number which were silent on the subject. He continued this line of investigation. He became more and more convinced of the truth of this view. It was with him not a mere hint—a suggestion, a fancy, a possibility or a probability—but an overmastering conviction and the dominating principle of his life, his thought, his conduct. He seems to have realized its predominating importance, that it furnished at once the solution of a problem which had puzzled the greatest minds of the past and led to the greatest variety and absurdity of opinion. More than this, that it furnished a rational method of treatment. Dr. Crawford was a man of learning and genius, and possessed the true scientific spirit. "I shall studiously avoid . . . offering any opinion," he says, "when I have not an ascertained fact to support it." As a comparative pathologist, I doubt if he had a superior. And whilst others had conceived the theory of a contagium vivum, none urged it with the same absolute conviction of its truth, the same mental certainty, the same mastering prevision as he. I think I cannot be wrong in stating this. Certainly he was far ahead of his day in his views—at least seventy or eighty years. What would such a man have accomplished had he been backed by the resources of such an institution as this? He not only held these views as to the cause, but he carried them to their legitimate conclusion as to prevention and treatment. He insisted upon absolute cleanliness and all those things that go to make a perfect hygiene—pure water, pure air, pure food, proper clothing, proper sewerage, and a regulation of the habits of living, but above all and including all, cleanliness. He insisted also that the sick should be removed from, and the well prevented from going to, infected localities, infested in his view with the morbific but invisible agents of disease. In the treatment of disease, likewise, he employed remedies with a view to their destructive effect upon the pathogenic organisms. What is this but antiseptic treatment? Did he not thus anticipate the modern methods of treatment and take the first step that led to the triumphs of Lister? It is true he used the remedies that were in vogue, but he used them upon a different principle and for a different object from those which other physicians had in view. Nor were the results of these investigations to be judged only by our ability at once to control and influence epidemics. "If no other benefit should result from such an investigation, the satisfaction that must be experienced in at all comprehending the nature of what is to be done, and clearly seeing the course that ought to be pursued, will be a blessed exchange for the confusion and doubt which at present exist."

We need not be surprised to learn that he met with opposition, with ridicule, with incredulity. No doubt he was regarded as a "crank" by his medical associates, for every great reformer who has a new truth to teach has such an experience. It is probably for this reason that he sought to inculcate his views through the medium of a lay journal. There is something extremely pathetic in the conclusion of his lecture on "The Cause, Seat and Cure of Disease," 1811. He expects opposition to his view but is prepared for it, has no disquietude as to the result, and would proceed perseveringly with his investigations, hoping to convince those who were not blinded by prejudice against the truth. He was willing to make any sacrifice to attain this object and to submit to any deprivation. "Our ignorance upon this matter cannot continue always," he prophetically declares, "for it is not beyond the limits of human intelligence." Fortunately, he was supported in his purpose by a mind which did not crave luxuries, but was satisfied with the necessaries of life; his inclinations were all averse to extravagance and the plainest fare was as acceptable to him as the richest viands. Having already advanced far in his 65th year, the charms of life had largely lost their attractions and there was, therefore, no impediment to his continuing in the path which he had followed for nearly twenty years. "The difficulties I have had to encounter," he concludes, "have indeed increased my ardor. As long as health and life remain, I shall deem myself strictly in the performance of my duty whilst so employed and I shall leave the result to that august Being who has made nothing in vain and who often makes use of the humblest instruments to accomplish his all-wise purposes lest presumptuous man should assume to himself the glory which belongeth alone to God." And so within a brief space passed out of this world this good man, this wise physician; and I venture to think you will agree with me that no one who is engaged in the study of pathology, nay, of medicine itself, can afford to be ignorant of his name and work.*

The writer desires to acknowledge his indebtedness for much of the biographical part of this sketch to Schultz's "History of Freemasonry in Maryland," Vol. II, 1885.

discoverable many hints to the same effect; but previous to my attempt, I believe I may assert, there is not one who has seriously endeavored to show that there is equally one law by which every animal without any exception is undeviatingly governed."—*The Cause, Seat and Cure of Disease.*

*Since this paper was written I have re-read Dr. Crawford's papers in the *Observer*, and find that I have represented him correctly. I shall not, therefore, change what I have written.

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A CASE OF ACUTE SUPPURATIVE CHOLECYSTITIS WITH ISOLATION OF THE BACILLUS TYPHOSUS EIGHTEEN YEARS AFTER AN ATTACK OF TYPHOID FEVER.*

By Guy L. Hunner, M. D., *Assistant Resident Gynecologist The Johns Hopkins Hospital.*

The following case is considered worthy of report, first, because of the great interest shown in recent years in the questions of cholecystitis and cholelithiasis; and second, because of two interesting features in the case itself, viz., the long period elapsing between a probable typhoid infection and the acute cholecystitis; and again, the peculiar morphological and staining properties of the bacillus isolated.

A German woman, aged 54 years, was admitted to the service of Dr. Kelly on February 3, 1899, seeking treatment for a large abdominal tumor. Her family history was unimportant, except that her father had died at the age of 60 with "yellow jaundice." She had given birth to four children, the oldest now being 32 and the youngest 21 years of age. She gave a history of childhood's diseases, and of particular interest was the history of an attack of "remittent fever" eighteen years ago. She was in bed only two weeks, and then insisted upon getting up, although her illness continued for two months. There was typhoid fever in the neighborhood at this time.

She first noticed enlargement of the abdomen three and one-half years ago, after getting up from a serious illness of six weeks' duration. This illness began suddenly as a severe pain in the right side, radiating down into the right inguinal region. The pain became intermittent in character, the attacks lasting one-half hour or more and leaving the patient nauseated and with abdominal tenderness. She had no vomiting and no jaundice, but suffered from several attacks of diarrhœa.

For two years following this illness the patient was well, though suffering occasionally from slight pains and soreness in the right side. She also observed a small movable mass in the right lower quadrant of the abdomen.

Eighteen months before admission to the hospital her attacks of pain increased in frequency and severity, and often after a paroxysm she could not bear the weight of her clothing. Recently she had been confined to bed for short intervals and had lost weight and strength.

Physical examination revealed the presence of a large cyst springing from the left ovarian region. The right ovary was represented by a hard, movable mass, of the size of a fist, lying high in the lower right abdominal quadrant.

For this condition Dr. Kelly operated on February 6, removing both tubes and ovaries with the ovarian cyst. Numerous adhesions to the intestines and omentum were severed or torn apart, and an adherent appendix was removed.

The period of early convalescence was without special interest, the abdominal wound being found healed on the tenth day.

On the fourteenth day the patient complained of nausea and vomited several times during the afternoon and evening. She had no distension and no particular tenderness. She was more comfortable on the day following, there being no nausea or vomiting. Her temperature reached 100.3° F., and the epigastrium was somewhat sensitive.

At 10 A. M., on the sixteenth day, she suddenly began to complain, as before, of great pain in the epigastrium. Her expression was anxious, and there was profuse perspiration. The temperature was 99° F., and the pulse rate 96. In the epigastrium one could see peristaltic waves from the distended stomach, and at the right costal margin a sensitive tumor which was dull on percussion could be palpated. At 8 P. M. the temperature reached 101° F.

On the seventeenth day her condition became very critical. The pulse rate and temperature, at 4 P. M., were respectively 140 and 103° F. A visible tumor, exquisitely tender, protruded from the costal border in the right hypochondrium, and the gastric distension was even more marked than before. The leucocyte count at 3.30 P. M. was 29,000.

There was some question as to whether we were dealing with a localized abscess, following the removal of the appendix, or with an acute cholecystitis. Her history might well have pointed to repeated gall-stone attacks during the past three and one-half years, although up to and during the operation these attacks of pain had been considered due to localized peritonitides associated with the growing ovarian tumors.

Operation (Dr. Stokes).—Cholecystostomy; evacuation of contents of greatly distended gall-bladder; permanent drainage.

An incision over the tumor to the right of the rectus border revealed a greatly distended and congested gall-bladder. Surrounding this were found numerous fresh adhesions and a sero-fibrinous exudate in the peritoneal cavity. No stones were felt on investigation of the bladder and ducts.

After suturing the bladder to the abdominal wall an incision was made allowing the free escape of a large quantity of straw-colored mucoid fluid. Investigation of the deeper portion of the gall-bladder by the fingers was followed by a welling up of a similar quantity of thin, yellow, odorless pus.

The bladder was thoroughly irrigated and permanently drained. No stone was found at the operation, but a calculus of the size of a pea was discharged one week later.

The patient made an uneventful recovery, constantly secreting large quantities of bile until the spontaneous closure of her fistula a month later.

Cultures and glass-slide smears were taken from the peritoneal exudate outside the bladder, and from both the mucoid fluid and the pus within the bladder.

Bacteriological note.—Both culture and smear from the peritoneum were negative for organisms. The smear from the mucoid fluid showed a very few polymorphonuclear and mononuclear cells, and a considerable number of bacilli, varying from short, thick rod-like forms to longer, thinner

* Read before the Johns Hopkins Medical Society, April 24, 1899.

forms. The smear from the pus showed many pus-cells and a few short, rod-like bacilli. On the agar plates from both the mucoid fluid and the pus was obtained a bacillus in pure culture that corresponded in all its cultural characteristics to the bacillus typhosus. It was actively motile. It decolorized by Gram's method. No gas was formed in glucose-agar. Milk was slightly acidified, reaching its greatest acidity about the second or third day. No indol was formed after one week either in Dunham's solution or in sugar-free bouillon. Flagella, typical of Eberth's bacillus, were demonstrated by Loeffler's method.

Morphology.—The morphology of this organism is so unusual that a full report is taken from the bacteriological notes on three of the media for the first two days:

Twenty-Four Hours: Plain-slant agar; a short to medium long-rod bacillus, occurring singly, in pairs and short chains; rounded ends; staining deeply and evenly, a few staining lightly in centre.

Glucose-Agar: Moderately long bacillus, some plump, some slender; rounded ends; staining very irregularly; some stain deeply full-length, others in the middle only, others on one or both ends, others have nearly lost stain throughout.

Potato: Plump medium-long bacillus; rounded ends; staining very irregularly. Many large swollen forms.

Forty-Eight Hours: Plain-slant agar; medium long-rod bacillus, mostly staining deeply and evenly; many involution forms, some plump and deeply staining, others long, filamentous and very irregularly staining.

Glucose-Agar: An entire loss of normal appearance of the field. The organisms are swollen; only an occasional one takes an even stain, most of them being but shadows or outlines of swollen bacilli. Others stain deeply in centre or on one or both ends.

Many are 4× as long and 2× as thick as normal and show an even faint stain.

Potato: Large plump bacilli with square ends, showing a special tendency to take a half-deep stain through middle and leaving both ends unstained. Many large filamentous forms.

Carter,* two years ago, reported before this society an organism isolated from a patient dead from typhoid fever which showed all the cultural characteristics of the typhoid bacillus but possessed morphological peculiarities similar to those of the organism under discussion. Our bacillus, however, differs from his in showing earlier involution forms, striking changes being observed on agar and potato in 24 hours. On milk, bouillon, and Dunham's solution this organism corresponded morphologically with the control culture of typhoid.

Widal reaction.—Testing with the patient's blood and the organism in question, the reaction was positive with the 1 : 10 and 1 : 40 dilutions, and unsatisfactory with the 1 : 100 dilution. With the known typhoid organism the reaction was positive with the 1 : 100 dilution. With blood from a known typhoid patient in the wards the stock culture of typhoid gave a marked reaction, while the organism in question gave a decided but somewhat less marked reaction in the three dilutions mentioned. Drs. Harris and Schenck very kindly controlled the Widal reactions and were satisfied with the positive character of the results.

Pathogenicity.—A rabbit was inoculated in the ear vein with 1.2 ccs. of a bouillon emulsion made on a 24-hour blood-serum slant culture. The rabbit died in about 30 hours and the bacillus was recovered in pure culture from the œdematous area at the site of inoculation; and, in the order of the greatest number of colonies, from the following organs: gall bladder, peritoneal cavity, right auricle, spleen, kidneys, urinary bladder, right pleural cavity.

Another rabbit, inoculated with 2 minims of a similar emulsion, was ill for several days but fully recovered.

Cushing,* in a paper read before this society one year ago, reported 4 cases, collected from the literature, of post-typhoidal cholecystitis associated with gall-stones which had been operated upon and the bacillus typhosus isolated. To these he added 2 cases from the Johns Hopkins Surgical Clinic.

At the same meeting Dr. Miller† reported a case from the Gynecological Clinic. A short time previously Imhofer‡ had reported a case, and recently Mixter§ has added another.

As a result of clinical and experimental observations on this subject Dr. Cushing proposed the following theory regarding gall-stone formation in these cases of typhoidal cholelithiasis—a theory which had similarly occurred to Dr. Mark W. Richardson.

He summarizes as follows: (1) The bacilli during the course of typhoidal infection quite constantly invade the gall-bladder; (2) the organisms retain their vitality in this habitat for a long period; (3) in the course of time the bacilli are almost invariably found to be clumped in the bile, suggesting the occurrence of an intravesical agglutinative reaction; (4) the clumps presumably represent nuclei for the deposit of biliary salts, as micro-organisms may with regularity be demonstrated in the centres of recently-formed stones; (5) gall-stones being present in association with the latent, long-lived, infective agents, an inflammatory reaction in the viscus of varying intensity may be provoked at any subsequent period.

A brief survey of some of the theories relating to cholecystitis and cholelithiasis in general may be of interest in connection with this report.

Naunyn,‖ in a recent clinical lecture, credits Reidel with holding all cases of cholecystitis dependent upon cholelithiasis; the symtoms, however, of gall-stone colic being due in most, if not in all, cases to the cholecystitis; and, furthermore, this cholecystitis is not an infectious process but follows traumatic irritation by the stone.

* Report of a case of Polybacterial Infection in Typhoid Fever, with Especial Reference to Certain Involutions exhibited by the Bacillus Typhosus.—The Johns Hopkins Hospital Bulletin, No. 75, June, 1897.

* Typhoidal Cholecystitis and Cholelithiasis. Report of a case without previous history of typhoid fever, and Discussion of a possible Agglutinative Reaction in the Bile and its Relation to Stone Formation.—The Johns Hopkins Hospital Bulletin, No. 86, May, 1898.

† The presence of the Bacillus Typhosus in the Gall-bladder Seven Years after Typhoid Fever.—The Johns Hopkins Hospital Bulletin, No. 86, May, 1898.

‡ A Case of Cholecystitis Typhosa. Laparotomie. Heilung.—Prager Medicinische Wochenschrift, 1898. Vol. XXIII, p. 169.

§ A Case of Typhoidal Cholecystitis Associated with Gall-stones; Operation; Recovery.—The Boston Medical Surgical Journal. Vol. CXL., May, 1899, p. 493.

‖ Uber Cholecystitis and Cholangitis Calculosa. Ztschr. f. prakt. Aerzte; Frank, A. M., 1898, VII, 627.

Table I.—*Collected cases of post-typhoidal Cholecystitis associated with Gall-Stones which have been operated upon and the bacillus typhosus isolated.*

	Author.	Sex.	Age.	History.	Operation.	Contents of Gall-Bladder.
I.	Gilbert and Girode, Comptes Rendus de la Soc. de Biologie, 1893, p. 95.	F.	45	Gall-bladder symptoms during fever. Subsequent gall-stone attacks.	Operator, Ferrier. Cholecystectomy 5 mos. after fever.	Bac. typhosus, pure. Gall-stone. Purulent fluid.
II.	Duprè (Chantimesse's Case), Les infections biliares. Paris Thèse, 1891.	F.	45	No attack with fever. Subsequent gall-stone colic.	Cholecystenterostomy 8 mos. after fever.	Bac. typhosus, pure. Gall-stone.
III.	v. Dungern, Münch. Med. Woch., June 29, '97.	F.	46	No attack with fever. Subsequent cardialgia. Periostitis of lower jaw in 13 yrs. with bac. typh. Acute gall-bladder attack in 14th year. Widal reaction positive.	Operator, Kraske. Cholecystostomy with evacuation of abscess 14 yrs. after fever.	Bac. typhosus, pure. No stone found, but "probably present." Abscess.
IV.	M. W. Richardson, Bost. Med. and Surg. Jour., Dec. 2, '97.	F.	50	Recent uncertain history of typhoid. Serum reaction positive.	Operator, M. W. Richardson. Cholecystostomy.	Bac. typhosus, pure. Brownish fluid with bacilli in clumps. Gall-stone in cystic duct.
V.	H. W. Cushing, Johns Hopkins Hosp. Bul., May, 1898.	F.	37	Uncomplicated typhoid 3½ mos. ago. Gall-stone colic with jaundice three weeks ago. Recent peritonitis.	Operator, Prof. Halsted. Cholecystostomy.	Empyæma of ruptured gall-bladder which contained numerous small stones. Bacillus typhosus.
VI.	H. W. Cushing, Johns Hopkins Hosp. Bul., May, 1898.	F.	26	No history of typhoid. Serum reaction positive.	Operator, Prof. Halsted. Cholecystostomy.	Bac. typhosus, pure. Brownish fluid, bacilli in clumps, gall-stones.
VII.	Richard Imhofer, Prager Med. Wochenschr., 1898, Vol. XXIII, p. 169.	F.	40	Typhoid fever typical, ending 6 weeks previously. Widal reaction.	Operator, Schloffer. Cholecystostomy.	Pus first, then pure bile, a large hazelnut-sized gall-stone. Pure culture. Bac. typhosus.
VIII.	G. Brown Miller, Johns Hopkins Hosp. Bul., 1898, Vol. IX, p. 95,	F.	37	Two attacks of gall-stone colic 7 yrs. ago, followed in 1 mo. by probable attack of typhoid fever. Gall-stone attacks ever since.	Operator, Kelly. Cholecystostomy.	Small amount of bile and milky fluid. Two stones. Pure culture. Bac. typhosus.
IX.	S. J. Mixter, Bost. Med. and Surg. Jour., May 25, 1899.	F.	60	"Dyspepsia" and occasional vomiting of food for 7 yrs. Positive attack of typhoid ending 6 wks. previously.	Operator, Mixter. Cholecystostomy. Choledochostomy.	Turbid bile. 30 gall stones. 2 stones in com. duct. Pure culture. Bac. typhosus.
X.	Writer's Case, Gyn. No. 6682 Feb. 23, 1899.	F.	54	Probable typhoid fever 20 yrs. ago. Widal reaction positive.	Operator, Stokes. Cholecystostomy.	Mucoid clear fluid first, then pus. Stone 1 week later. Bac. typhosus.

Several other post-typhoid cases have been reported without bacteriological notes. These are omitted.

Naunyn calls attention to the fact that all cases of cholecystitis do not have the symptoms of stone. In many other cases diagnosis of gall-stone colic is made *intra vitam*, and abdominal section reveals inflammation of the bladder but no stone in the bladder or passages.

He agrees with Riedel that in many of the so-called gall-stone attacks the symptoms are not caused by wandering of the stones, but by inflammation of the bile passages; but the inflammation is not, as Riedel claims, an aseptic, but a severe infective cholecystitis and cholangitis.

Naunyn calls attention to the chills of cholelithiasis and the spleen and liver tumor that generally accompany the attacks, all of which point to general infection.

Maurice H. Richardson* reports, from a series of 59 operations upon the gall-bladder, 10 cases in which no history of pre-existing gall-stones or of recent acute infectious disease could be obtained. He speaks of these cases of sudden onset in persons of apparently perfect health as "acute accidental cholecystitis." In 4 of his 10 cases no gall-stone was found.

Thus, while we know most cases of acute gall-bladder inflammation to be associated with the presence of stones, we must recognize that some are dependent in no way upon this factor.

The experiments of Netter† and of others demonstrate the liability of the bile to infection after aseptic ligature of the common duct. A catarrhal swelling of the ducts and stasis of the bile might similarly lead to infection and cholecystitis.

The etiology of stone-formation has been a hotly contested question for the past 10 years, the war being chiefly waged in France. On the one side are those, headed by Bouchard,‡

*Acute Inflammations of the Gall-bladder. The American Journal of the Medical Sciences, June, 1898.

†"Présence normale de deux microbes pathogénes, etc." Le Progrès Médical, 1886, p. 992.

‡Bouchard: "Maladies par ralentissement de la nutrition." Paris, 1882, 6e leçon, p. 79.

who still cling to the old idea of a "special diathesis." Others, with Hanot, believe that the calculi probably have a microbic origin, but diathesis is of preponderating influence. At the other extreme are those who claim a microbic origin for gall-stones and support this view by experimental research. Naunyn* was the first to formulate a theory, holding as probable the infectious origin of biliary lithiasis, and his views have been ably supported in France by such experimenters as Gilbert and his associates, and Mignot.

In this country, Dr. Mark W. Richardson† and Dr. Harvey Cushing‡ have been successful in the experimental production of cholelithiasis.

Mignot,§ after a long series of careful experiments, concludes that the chief factors in the production of biliary lithiasis are: (1) the presence in the gall-bladder of an attenuated organism, of any variety whatever; (2) a relative inertia of the biliary reservoir causing partial stasis and preventing the premature expulsion of soft concretions of cholesterin.

Gilbert,‖ who first reported the experimental production of biliary lithiasis, sounds a warning against the unreserved interpretation of human lithiasis in the same terms. He has recently¶ expressed belief in his ability to cause lithiasis without the intervention of bacteria and by the sole method of a chemical irritation of the vessel walls.

Success in this line, however, would not warrant us in classing human lithiasis as a dyscrasic or toxic process, and we must consider the question sub judice until further investigation throws light upon more of its many problems.

* Naunyn: "Die Gallenkrankheiten." Congrès de Wiesbaden, 1891.

† "On the rôle of Bacteria in the Formation of Gall-stones." Jour. Bos. Soc. Med. Sc., Vol. III, No. 4, Jan., 1899.

‡ Remarks following this paper.

§ "L'origine microbienne des calculs biliaires." Arch. Generales de Médicine, 1898, Vol. II, p. 129.

‖ Angiocholités et cholécystites typhiques expérimentales. Bull. de la Soc. de biologie, Dec. 23, 1893.

¶ Note pour servir à l'historie de la théorie microbienne de la lithiase biliaire. Arch. gen. de Méd., Paris, 1898, II, 257.

OBSERVATIONS UPON THE ORIGIN OF GALL-BLADDER INFECTIONS AND UPON THE EXPERIMENTAL FORMATION OF GALL-STONES.*

By Harvey Cushing, M. D.,

Associate in Surgery, The Johns Hopkins University.

Dr. Hunner's report adds one more to the list of cases in which post-typhoidal gall-stone formation and the persistence of Eberth's bacillus in the gall-bladder have combined to set up a suppurative cholecystitis, demanding operative intervention.

There seems to be little doubt at present but that the original source of infection in these cases is a hæmatogenous one, the bacilli first entering the portal circulation through the atrium afforded by the intestinal lesions. As Fütterer[1] has shown experimentally, organisms so introduced are probably for the most part rapidly eliminated by the liver and thus enter the biliary passages, though many may pass into the general circulation, thus producing a temporary peripheral septicæmia. The frequency of such a typhoidal septicæmia has been demonstrated at this hospital by Dr. Gwyn, who has succeeded in cultivating typhoid bacilli from the blood of eight out of thirty patients examined for this purpose in Dr. Osler's clinic and the occurrence in a variety of situations of peripheral suppurative lesions for which the specific organism of the disease is responsible is thus readily explained.

The belief is quite universal, however, that the biliary infection comes about by ascension and that the organisms enter from the intestine into the common duct. Thus Gilbert,[2] in 1894, held that *B. coli* played the most important rôle in cholecystitis because it was found by him in the duodenum in numbers exceeding all other species and because it was possessed of motile properties which enabled it to enter the common duct. More recently Richardson is quoted by Keen[3] as also expressing a belief in the ascending or intestinal source of infection of the biliary apparatus. He found on one occasion at autopsy "pure cultures of the typhoid bacillus in the gall-bladder, duodenum and jejunum, and it was only when the ileum was reached that colon bacilli began to appear at all." Were the infection an ascending one, I am inclined to believe that other intestinal bacteria from the ileum would have been found associated with the bacillus typhosus in this case.

Recent investigations (unpublished) upon the flora of this part of the intestinal tract have demonstrated, in agreement with the observations of Gilbert and Dominici,[4] that the duodenum, especially of rabbits, is very free from micro-organisms. On one occasion a cubic centimeter of a 24-hour bouillon culture of *B. typhosus* was injected into the ear vein of a rabbit. Two days later from the gall-bladder and duodenum pure cultures of the organism were recovered—a result similar to Richardson's but resultant of course to a hæmatogenous infection. I was not, however, always so fortunate in recovering the organisms. In *Rabbit* IX, which case I will mention later, two days after a similar inoculation into the ear vein, the organisms were not recovered from the bile and in all probability they had been entirely eliminated. I have seen a similar rapid disappearance on direct inoculation into the gall-bladder in dogs. In one animal the bile was sterile twenty-four hours after the inoculation.

Bile itself, contrary to the wide-spread belief in its anti-

* Remarks before the Johns Hopkins Medical Society to accompany Dr. Hunner's report of a Case of Typhoidal Cholecystitis.

septic properties, is a favorable culture medium for most organisms and it is surprising that normal bile should ordinarily be sterile, as Gilbert has demonstrated, when we consider that micro-organisms are in all probability frequently being passed out with it through the liver.

Leubuscher[5] believes that the sterility rests on an unhindered outflow, some degree of obstruction being requisite for the persistence of micro-organisms.

Létienne[6] showed that bacteria are more likely to be present, when there is no disease of the gall-bladder itself, in association with abnormal conditions of the body. In forty-two cases examined he found *Staphylococcus albus* 13 times, *B. coli communis* 13 times, non-liquefying *Staphylococcus* 3 times, *Staph. pyogens citreus, aureus,* etc., 1 each, *B. typhosus, Pneumococcus,* etc., 1 each. On seven occasions the bile was mono microbic, on 17 poly-microbic, and on 18 sterile. These observations merely show what a highway for micro-organisms the biliary passages are. The observation of Netter[7] is in accordance with Leubuscher's view that ligation of the common duct in animals is followed by an acute inflammation of the biliary passages. Here also the infection is with less likelihood due to an ascending process than to an inflammation induced by micro-organisms, possibly of intestinal origin, which, eliminated by the liver from the portal system, enter the bile ducts from above. Such an infection, however, does not necessarily follow a pathological occlusion of the common duct. Dr. Halsted recently removed a primary carcinoma of the duodenal papilla which had caused complete obstruction. Cultures from the common duct were negative as well as those from the gall-bladder, which was greatly distended by a pale mucoid fluid containing a deposit of fine biliary sand.

The typhoidal lesions, however, offer a portal of entry not alone for the typhoid bacillus but also for all other bacterial inhabitants of the intestine. The *Bacillus coli communis*, for example, which organism, recent observers, as Dreyfuss,[8] Sanarelli,[9] de Klecki [10] and others, have shown to acquire increased virulence in the presence of the inflammatory products of typhoid and other enteritides may similarly enter the portal circulation. This, Dr. Welch[11] demonstrated some years ago to be the case. The colon bacillus, however, apparently rarely passes beyond the liver into the general circulation, its ravages being limited to the confines of the portal system. It consequently may be as frequent a factor and indeed is actually a more frequent agent in the production of post-typhoidal gall-bladder complications than the specific cause of the disease itself. This has recently been emphasized in a paper[12] read before this society.

As was shown in one of the cases reported at that time, there was an active serum reaction toward both *B. typhosus* and the colon bacillus isolated from the gall-bladder. This increased virulence of *B. coli* in many cases of typhoid, being the cause of unusual agglutinative properties of the host's serum toward this organism,* may account for the occasional clumping of *B. coli* in the bile when it has once entered the gall-bladder in correspondence with the reaction toward the bacillus typhosus which seems to be the rule there [13] at some period of the fever.

Salimbini[13] regarded the agglutinating property as one only acquired by the blood-serum after being shed, and expressed a disbelief in its occurrence in the living body. Durham,[14] however, disagrees with this on the ground that numerous observations on peritoneal injections in immunized animals have always shown that agglutination occurs within the peritoneal cavity. Since it has been proven that the bile of typhoid patients acquires agglutinative properties, this reaction *in vivo* in the gall-bladder naturally would occur in a fashion similar to that produced experimentally in the peritoneum. Richardson[15] has examined at autopsy the bile of fatal cases with this in view and found large clumps of bacilli in every case but one (five out of six). It is important to note that the blood-serum of this one case had failed to show an agglutinative reaction during life.

What relation the organisms have toward the deposition of bilirubin calcium and stone-formation has not been conclusively proven. The views of Naunyn[16] are generally accepted, though some of his chemical theories, chiefly that relating to the local production of cholesterin, have been questioned by Chittenden.[16]

The organisms may be present in the gall bladder just as in the urinary bladder during the course of typhoid fever without producing any evidence of cystitis whatever or exhibiting any tendency to become attenuated or to agglutinate, though the patient's serum may give a decided reaction outside of the body.

Just what influence tends to agglutinate the organisms *in vivo* and whether the "clumps" formed really act primarily as the nidus for stone-formation has not been actually demonstrated.

The mere clumping of the organisms in the bile has *in vitro* no macroscopical effect whatever on the bile. I have inoculated bile, aseptically withdrawn from the gall-bladder of animals, with the bacillus typhosus, and subsequently precipitated the bacilli by adding serum from a typhoid patient without producing any appreciable effect on the medium whatsoever.

The mere presence of the micro-organisms in the bile, however, may alone not be sufficient to incite the catarrhal process, the "lithogenous catarrh" of Naunyn, which is generally conceded [17] to be an essential element in the process. I have never been able to produce any such catarrhal process in dogs or rabbits by simple intravenous injection of

* The fact that human serum in health often possesses agglutinative properties toward varieties of *B. coli* probably is only an evidence of an acquired characteristic following an unrecognized invasion of the organism during the course of some preceding enteritis. Such an occurrence has probably been a secret forerunner of most cases of biliary lithiasis; the organisms, being eliminated by the liver, enter the gall-bladder and under certain favoring circumstances produce lithiasis, which after the infectious agent has died out may give no subsequent symptoms. It is not improbable that a chronic enteritis such as may be associated with alcoholism may constantly feed the liver with intestinal bacteria, chiefly *B. coli communis*, and thus ultimately be responsible for the cirrhotic changes which take place there. The demonstration that the organisms found by Adami in cirrhotic livers are colon bacilli would favor this view.

the bacillus typhosus or by injection of the organism directly into the gall-bladder, though the animals have been examined at periods from a few days to several months.

Organisms may be recovered from the gall-bladder long after the original injection, and they frequently are found "clumped," as Blachstein[18] and Welch observed some years ago. The organisms may so remain for an indefinite period without producing any apparent inflammation of the mucosa. To induce this requisite catarrhal process, some other element, presumably some form of irritation such as traumatism or some hindrance to the proper evacuation of the gall-bladder, is necessary.

I am able to show to the society some small biliary calculi of typhoidal origin obtained from the gall-bladders of rabbits, in both cases at the time of inoculation the biliary apparatus having been intentionally maltreated.

On one occasion the organisms (non-attenuated) were inoculated directly into the gall-bladder, which had to be held tightly for some time by a piece of gauze between the fingers to prevent leakage after the syringe was withdrawn. At the autopsy, eight weeks later, three small millet-seed concretions were found adherent to the mucosa of an inflamed thickened and distended gall-bladder.

The second case (RABBIT IX of our series) is as follows:

March 17, 1898. Inoculation of 1 cc. of 24-hour bouillon culture of *Bac. typhosus* into ear vein.

March 19. Laparotomy. No evidence of inflammation. Cultures and cover-slips from gall-bladder and duodenum were negative for micro-organisms. Considerable traumatism of gall-bladder.

March 21. Second inoculation of 1 cc. of 18-hour culture of *Bac. typhosus* into ear vein. Animal quite ill subsequently, but recovered.

June 13. Widal reaction positive. Laparotomy. Marked evidence of cholecystitis. Gall-bladder bound up by adhesions in lappets of liver and identified with difficulty. One cc. of pale bile aspirated from gall-bladder. Stained preparations showed a few rod-shaped organisms. Culture=*Bac. typhosus.*

June 14. Animal found dead. Autopsy. Peritonitis. Serosa greatly bile-stained. Gall-bladder thickened, congested and densely adherent to liver. Contents: Small amount of pale mucoid material, and three gall-stones. The largest is dark-colored, somewhat irregular in shape, measuring 3 mm. in its longest diameter. Decomposition had set in and bacterial observations were not made.

Possibly such a concretion may be regarded merely as a precipitation and not a true crystallization though it possesses the characteristics of a young biliary calculus having a marked cholesterin covering. The stone depicted by Richardson[19] and the early calculi described by Gilbert and Fournier[20] were evidently of this character. The concretions were regarded as stones in the primary stages of development. Their chief constituents are bile pigments combined with calcium. These bilirubin calcium concretions are less commonly found in the human gall-bladder where stones ordinarily contain a large predominance of cholesterin. Chittenden[16] says that bovine gall-stones possess this same characteristic and are often pure-pigment calculi, sometimes wholly without cholesterin.

Although Galippe,[21] as early as 1886, advanced the theory of a microbic origin of lithiasis in general, the chief credit of the demonstration of the infectious nature of cholelithiasis belongs to Gilbert. The results of his observations, begun in 1890,[22] were utilized by Naunyn[15] at the Wiesbaden Congress in 1891, when he advanced his hypothesis on biliary infections. Since that time Gilbert, and his collaborators, Girode, Dominici, Claude and Fournier, have continued to publish the progress of their interesting and valuable investigations on the relation of infectious processes to diseases of biliary apparatus.

Experimental attempts to produce calculi of infectious origin were for a long time unavailing. In 1893[23] they first noted the presence of *"petites concrétions verdâtres"* which had formed during a typhoidal cholecystitis in a rabbit. Following this discovery, methodical attempts were made for a number of years to obtain more perfect and undoubted concretions. On January 29, 1897, these efforts were rewarded by the formation of a definite stone obtained from the gall-bladder of a dog previously inoculated with the *Bacillus coli communis.*[22]

Gilbert and Fournier, however, failed to announce their results until after Mignot, who had entered the same field of work, had presented to the Societé de Chirurgie, on the 19th of May, 1897, three small experimental calculi formed in a guinea-pig by *Bacillus coli.*[24] It was generally believed that the bacillus of Escherich played the most important part in these infections. Interest in typhoidal cholecystitis, however, led Gilbert to experiment with Eberth's bacillus and on October 30, 1897, he with Fournier,[20] profiting by Mignot's idea of attenuation, reported the production of biliary calculi in a rabbit resultant to an infection with *B. Typhosus.*

These calculi were regarded as stones in the primary stage of their development and from the description they must have resembled closely those produced by Richardson[19] and those shown to this society. The gall-stones, however, which Mignot succeeded in producing experimentally were said by Hartmann[24] and acknowledged by Gilbert[27] to have been identical in appearance with those commonly seen in human gall-bladders. These calculi were presumably five or six months old.

Various experimenters have adopted different methods in their attempts to produce infectious cholelithiasis. Endeavors to modify the composition of the bile and to alter the mucosa of the gall-bladder and to produce in divers ways a biliary stasis have equally been unrewarded.

The mere introduction of virulent micro-organisms alone as well as the introduction of aseptic foreign bodies[25] without micro-organisms have similarly been unsuccessful. Mignot claimed that one of the two conditions essential to the formation of calculi was the extreme attenuation in virulence of the microbe employed, and regarded the degree of virulence of the organism as more important than the species. Adopting this principle, Gilbert and Fournier,[20] by inoculating cultures of colon or typhoid, previously attenuated by heat, directly into the gall-bladder, were rewarded by finding some months later definite calculi, from the centres of which they recovered the original organisms.

This preliminary attenuation of the infective agent which

Mignot has found esssential to the process may possibly, under certain conditions, take place in the body and be analogous to the agglutination of the organisms which takes place in the gall-bladder; the clumps, according to Richardson's hypothesis, forming the primary nidus of deposition for the biliary salts and pigments. In his attempt to form stones on this principle he inoculated an agglutinated culture of *Bacillus typhosus* directly into the gall-bladder of a rabbit and was successful on one occasion in producing a fair calculus.

Mignot,[28] however, claims that to produce true stratified calculi five or six months are requisite, and that a second condition, as important as the attenuation of the micro-organisms, is necessary, namely, the prevention of the premature expulsion of the soft concretions. This he accomplished in various ways. In his most recent article two especially characteristic cases are described.

In one of them the gall-bladder was tamponed in the presence of colon bacilli for one month. At the end of that time the tampon was removed and the gall-bladder closed. Fourteen months later, 7–8 faceted stones were found occupying the gall-bladder which presented the anatomical picture characteristic of old gall-stone cases.

In another case two gall-stones were made to form about a thread which was fastened into the wall of a gall-bladder previously inoculated with attenuated colon bacilli. Dr. John Homans[29] has reported a clinical experience similar to this experimental one in which at a second operation for cholelithiasis, gall-stones were found to have formed about the threads used at the primary operation in suturing the gall-bladder to the abdominal wall. There is no accompanying bacteriological note, unfortunately. These were large cholesterin stones such as Mignot has succeeded in producing and were found twenty months after the primary operation.

Mignot believes that the process of stone-formation and increment in the size of stones ceases with the death of the micro-organisms. Stones found in the gall-bladder are presumably on most occasions all of the same age, and always possess the same appearance, chemical composition and bacteriological characteristics. The original condition favorable to their formation, therefore, seems to be a transitory one. Old calculi are usually sterile, though their nuclei may contain the faintly-staining shadow of bacilli. Recently-formed stones contain micro-organisms. Mignot further believes that if stones in process of development are removed the chances are in favor of a new formation. This is an argument against the so-called "ideal" operation and justifies the clinical experience of most surgeons that it is preferable to drain the gall-bladder in recent cases till one is practically sure of the aseptic condition of the bile and convinced that the ducts are sufficiently patent to allow of the free escape of the contents of the gall-bladder. It is surprising that one does not more often encounter secondary formations of gall-stones after preliminary operations, when we consider that the combination of traumatism and necessarily-retained micro-organism is present, a combination most favorable for the experimental production of stones.

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NOTE ON NEW BOOKS.

A Clinical Text-Book of Medical Diagnosis for Physicians and Students. Based on the most recent methods of examinations. By OSWALD VIERORDT, M. D. Authorized translation, with additions by FRANCIS H. STUART, A. M., M. D. Fourth American edition from the fifth German; revised and enlarged, with one hundred and ninety-four illustrations. (*Philadelphia: W. B. Saunders*, 1898).

The appearance of a fourth American edition from the fifth German of Vierordt's "Medical Diagnosis," might seem to call only for general remarks on the merits and evident popularity of the work. It has been in its way so long a standard text-book that it hardly requires an introduction to American readers.

The principal additions mentioned by the author in his preface to this edition, have been made in the sections treating of gastric digestion and diseases of the nervous system. A few things might still have been added; for example, there is here no mention of Turck's gyromele, or of several other apparatuses that have fully as much value as diagnostic appliances as some of those noticed at length. In the section on the nervous system the occasionally very confusing nervous symptoms of chlorosis appear to be unnoticed, which is an important omission. Other deficiencies might be pointed out, but in most respects the work seems well up to date, and a useful addition to any physician's library. The illustrations are well selected and generally very helpful; in this regard the work has a decided advantage over some other text-books on medical diagnosis.

BOOKS RECEIVED.

Studies on Reactions to Stimuli in Unicellular Organisms. II.—The Mechanism of the Motor Reactions of Paramecium. IV.—Laws of Chemotaxis in Paramecium. By Herbert Jennings. Reprinted from the American Journal of Physiology, May, 1899.

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The Diseases of the Nervous System. A text-book for physicians and students. By Dr. Ludwig Hirt, Professor at the University of Breslau. Translated, with permission of the author, by August Hoch, M. D., assisted by Frank R. Smith, A. M., (Cantab.) M. D. With an introduction by William Osler, M. D., F. R. C. P., F. R. S. 181 illustrations. 1899. 8vo. 715 pages. D. Appleton & Company, New York.

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In the methods of instruction especial emphasis is laid upon practical work in the Laboratories and in the Dispensary and Wards of the Hospital. While the aim of the School is primarily to train practitioners of medicine and surgery, it is recognized that the medical art should rest upon a suitable preliminary education and upon thorough training in the medical sciences. The first two years of the course are devoted mainly to practical work, combined with demonstrations, recitations and, when deemed necessary, lectures, in the Laboratories of Anatomy, Physiology, Physiological Chemistry, Pharmacology and Toxicology, Pathology and Bacteriology. During the last two years the student is given abundant opportunity for the personal study of cases of disease, his time being spent largely in the Hospital Wards and Dispensary and in the Clinical Laboratories. Especially advantageous for thorough clinical training are the arrangements by which the students, divided into groups, engage in practical work in the Dispensary, and throughout the fourth year serve as clinical clerks and surgical dressers in the wards of the Hospital.

REQUIREMENTS FOR ADMISSION.

As candidates for the degree of Doctor of Medicine the school receives:

1. Those who have satisfactorily completed the Chemical-Biological course which leads to the A. B. degree in this university.

2. Graduates of approved colleges or scientific schools who can furnish evidence: (*a*) That they have acquaintance with Latin and a good reading knowledge of French and German; (*b*) That they have such knowledge of physics, chemistry, and biology as is imparted by the regular minor courses given in these subjects in this university.

The phrase "a minor course," as here employed, means a course that requires a year for its completion. In physics, four class-room exercises and three hours a week in the laboratory are required; in chemistry and biology, four class-room exercises and five hours a week in the laboratory in each subject.

3. Those who give evidence by examination that they possess the general education implied by a degree in arts or in science from an approved college or scientific school, and the knowledge of French, German, Latin, physics, chemistry, and biology above indicated.

Applicants for admission will receive blanks to be filled out relating to their previous courses of study.

They are required to furnish certificates from officers of the colleges or scientific schools where they have studied, as to the courses pursued in physics, chemistry and biology. If such certificates are satisfactory, no examination in these subjects will be required from those who possess a degree in arts or science from an approved college or scientific school.

Candidates who have not received a degree in arts or in science from an approved college or scientific school, will be required (1) to pass, at the beginning of the session in October, the matriculation examination for admission to the collegiate department of the Johns Hopkins University, (2) then to pass examinations equivalent to those taken by students completing the Chemical-Biological course which leads to the A. B. degree in this University, and (3) to furnish satisfactory certificates that they have had the requisite laboratory training as specified above. It is expected that only in very rare instances will applicants who do not possess a degree in arts or science be able to meet these requirements for admission.

Hearers and special workers, not candidates for a degree, will be received at the discretion of the Faculty.

ADMISSION TO ADVANCED STANDING.

Applicants for admission to advanced standing must furnish evidence (1) that the foregoing terms of admission as regards preliminary training have been fulfilled, (2) that courses equivalent in kind and amount to those given here, preceding that year of the course for admission to which application is made, have been satisfactorily completed, and (3) must pass examinations at the beginning of the session in October in all the subjects that have been already pursued by the class to which admission is sought. Certificates of standing elsewhere cannot be accepted in place of these examinations.

SPECIAL COURSES FOR GRADUATES IN MEDICINE.

Since the opening of the Johns Hopkins Hospital in 1889, courses of instruction have been offered to graduates in medicine. The attendance upon these courses has steadily increased with each succeeding year and indicates gratifying appreciation of the special advantages here afforded. With the completed organization of the Medical School, it was found necessary to give the courses intended especially for physicians at a later period of the academic year than that hitherto selected. It is, however, believed that the period now chosen for this purpose is more convenient for the majority of those desiring to take the courses than the former one. The special courses of instruction for graduates in medicine are now given annually during the months of May and June. During April there is a preliminary course in Normal Histology. These courses are in Pathology, Bacteriology, Clinical Microscopy, General Medicine, Surgery, Gynecology, Dermatology, Diseases of Children, Diseases of the Nervous System, Genito-Urinary Diseases, Laryngology and Rhinology, and Ophthalmology and Otology. The instruction is intended to meet the requirements of practitioners of medicine, and is almost wholly of a practical character. It includes laboratory courses, demonstrations, bedside teaching, and clinical instruction in the wards, dispensary, amphitheatre, and operating rooms of the Hospital. These courses are open to those who have taken a medical degree and who give evidence satisfactory to the several instructors that they are prepared to profit by the opportunities here offered. The number of students who can be accommodated in some of the practical courses is necessarily limited. For these the places are assigned according to the date of application.

During October a select number of physicians will be admitted to a special class for the study of the important tropical diseases met with in this region.

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